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Personality Research and Theories of Personality Structure: Some Convergences [1]

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I

Three theses form the substance of this, my president's paper, to our Society. One, there is theory as to personality, theory which has crystallized out of the clinically realistic facts of life as investigated by two men of highest genius. It is theory developed in the clinical field. Two, investigation carried on systematically with the Rorschach test and the results as seen through the medium of theory underlying this test are valid when tested by findings independently obtained by clinical method and in accordance with clinical theory. Three, current viewpoints on the logic of science concerning method and design are applicable to the method and design of the investigations referred to in my theses one and two. Or stated conversely the method and theory of the two men I have in mind as well as method and theory in Rorschach investigation are consistent with one another and with a general logic of science. They converge.

Before proceeding with this exposition a word is necessary about the topic of personality in general. When the future historian of psychology comes to write of the years in which those of us here present came of age he may well focus on these years as the period in which the study of personality as a science came of age. He will so write but with reservations, the same that many of you here tonight must be entertaining. Is there a science of the unit personality? One can even ask—the personality, does it exist? Considered philosophically it is a construct, by which we mean a figment. It is nothing concrete. No one has ever seen personality. We do say that a man or a woman has personality, as we also say that our cat has it or our parakeet, and as the advertising men assure us, a piece of furniture, or a cigarette, or a pair of bedroom slippers have personality. All of which is only a way of saying that the man, the cat, the piece of furniture, possess certain traits. These are known or are inferred from certain overt manifestations. We reason from these outer data to the underlying construct.

Personality is then a concept, a handy abstract term useful in the study of human behavior. The term unifies. It does this to the overtly observable phenomena which as first seen are disorganized, helter-skelter, confused. It moves us to sift these, to compare and examine them in the light of some large idea meaningful in the field of behavior, to discard some, retain those that fit, and to embrace all within a statement which is also a prediction. All of which is to say that the term stands for a program of research. To the extent that the new experience is consistent with the idea, it all builds up into a theory.

II

And now back to my three theses. One of the two great men to whom I referred above worked in the field of neurology, Hughlings Jackson. He is best known for that description of the epilepsy which bears his name, Jacksonian epilepsy. It is description

[1] The thinking here reported grew, in important measure, out of findings obtained in a research, conducted under grants from the National Institute of Mental Health, Department of Health, Education and Welfare; Research Project MH 597. S. J. Beck, Principal Investigator.

which makes most satisfying reading to those of us in the habit of looking for evidence as the point of departure for reasoning. It is a factual recounting of the overtly observable behavior, relating the observed data to the known facts of the nervous system, with especial reference to the brain; selecting the facts and rationale which make sense in the light of the whole behaving person; resynthesizing these data and behavior and rationale in the light of our knowledge of the brain's function.

The net result is his concept that however disordered the person, it is always a whole person on whom we are looking. The total observed activities—Jacksonian epilepsy, aphasia, chorea, or any of the neurologically caused diseases—this total behavior is the work of whatever whole brain structure is available to the sufferer at the time. A person in a delirium is, by the Jacksonian theory, not one who has lost his reason. He is a person living by as much mental power as is available to him.

"For the scientific study of maladies of the nervous system . . . we must also take into account the undamaged remainder . . . what is left intact of a nervous system mutilated by disease," (8; p. 411).

Let us exemplify by a patient, say in early stages of senility. Some moderate errors in judgment have only recently been cropping up in his day to day conduct of his business. His personality as judged by deportment, adhesion to social standards, personal self care, and effort at independence, remains unchanged. By the Jacksonian concept there are moderate losses of brain function, moderate pathology within the "highest" brain centers. But in the main he is intact as a psychologic person. He is functioning with the tissue that is without damage.

Consider next a patient in an extensive intoxication, whether the agent be alcohol or some other drug. Critical perception is seriously impaired, judgment is poor, possibly clouded. The illness is obviously more severe or the patient may even be suffering those bizarre halucinations in which a variety of animals or multicolored little men are playing with or amusing him. The brain damage is that much more wide-spread, with the attendant greater loss of intellectual function. The individual is, however, still capable of enough conscious psychologic activity to experience certain percepts unreal as they are. That is, he is the whole person functioning with equipment represented by his intact layers. In the condition next schematized more brain tissue is inoperative and much less of the psychologic person remains. Possibly the dream moments of sleep, the "noises in a swound" of the *Ancient Mariner* is as much consciousness as is here pictured. Finally there is Jackson's "fourth degree of insanity," presumably the unconscious state in the full epileptic fit or any coma. In Jackson's language, "there are no positive mental symptoms; there is no mind or consciousness."

The queer productions in mental disorder are then activity of still healthy brain tissue.

"A delusion, however absurd it may be, signifies activities of healthy nervous arrangements," (8; p. 418).

Again,

"All mental states, healthy or morbid, are the survival of the then fittest states during activity of what are the highest arrangements at the time," (8; p. 24).

The damage to the higher layers can not be spoken of as causing the symptoms, as for example, in speech defect. For,

"Strictly speaking it is simply impossible that softening of the brain can cause any wrong utterances; for softened brain is no brain; so far as function, good or bad is concerned it is nothing at all. I submit that the wrong utterances occur during activity of parts *not* softened but healthy," (8; p. 17).

"The positive symptoms are indirectly caused, or, it is better to say, are 'permitted': they answer to increased activity of lower nervous arrangements, uncontrolled by their now exhausted higher," (8; p. 21).

In language of more current neurology, the damage to the higher layers means the removal of the inhibition. That is one major function of the cortex. It inhibits the "lower" centers, those connected with biologically more primitive behavior including reflex action and autonomic and hence instinctual functions.

Jackson makes it clear also that it is first and last the brain as physical organ which is strictly and narrowly his field of investigation. He is unequivocally explicit on this point:

"It is impossible to study cases of disease of the brain methodically if we confuse psychical states with nervous states. We must be thoroughly materialistic in our method so far as is practicable," (8; p. 9).

"Consciousness *attends* activity of a certain nervous arrangements, and ceases when those nervous arrangements are *hors de combat*," (8; p. 16).

That is, Jackson declines to psychologize. He is a neurologist and limits his exposition to the data in his field. As psychologists we are however interested in his theorizing principally for the aid it lends toward understanding psychologic phenomena. And his thinking can not help being a bridge from neurologic to psychologic theory and specifically in the field of personality. Thus his language

"Figuratively speaking, and yet almost literally, the patient who has undergone dissolution is at once 'less himself', and 'too much himself'; speaking more in detail, he is too little his *highest* self and too much his lower self . . . We may say that he suddenly ceases to be enough his highest self, and at once or soon, becomes too much his lower self," (8; p. 26).

Which is to say that as a person he is now living by less mature patterns. But in saying this we are actually stating the essence of Freudian personality theory. By this theory the previously developed standards, the ego, have lost some or all their effectiveness. The psychologic person is in retreat to an earlier pattern of living. The patient is, in psychoanalytic language, in regression. This is exactly what we are observing in Jackson's "dissolution."

In sum, and it is exciting to realize this, when we are formulating personality structure as derived from the Jacksonian hypothesis, we are at the same time actually talking of the Freudian personality concept. The converse also holds. The data of the one fit into the logic of the other, and *vice versa*.

It is not necessary to go into detail here concerning the psychoanalytic hypotheses. Their essentials are well known and in fact Freudian thinking has so far percolated into that of the European and American populations at large as to become part of the folk culture.

This convergence of Jacksonian and Freudian theory is discussed in detail by Grinker (7). A psychoanalyst who started his career as a neurologist, he has a systematic knowledge of both disciplines. He traces infantile developmental patterns within the framework of Jacksonian logic, discusses neurologic phenomena with the psychoanalytic theory of symptom formation, of the dream, of regression, points to implication for learning theory, and relates his reasoning to psychoanalytic ego theory. "It is amazing," he asserts, "how this psychological explanation coincides dynamically with the neurological."

The convergences can in fact be traced throughout the range of psychodynamic pictures. Consider hysteria. In the hysteric painful experiences or ideas are removed from consciousness. The patient carries on now with less mental equipment than before the hysteric attack. Freud's Dora, she whose love affair with its frustrations may be said to have opened the door to psychoanalysis, this young woman would have attacks of aphonia—when her lover was absent from Vienna. On his return she would regain her voice. In Jackson's language, she was now less than she was before. In the Dora with the

behavior pattern which Freud reports some of the functioning which Jackson relates to the highest level of evolution was lost. By the Freudian hypothesis the loss was related to a strongly experienced emotional need. There were certain repressions, i.e. exclusion of certain ideas from consciousness. In Jackson's model, only the upper layer would be affected, and that not to an extensive degree. The patient was intact in essentially all her mental functioning. But the symptoms did show that she had suffered loss similar to that found with neurologic damage.

All of which is not intended as argument that the emotions "caused" the aphonia. To do so would be to make assumptions as to cause and effect in mental phenomena, and their relation to the activity of the brain as organ. It would be a wandering into that *terra incognita* the mind-brain problem. As psychologists we have no more warrant for neurologizing our data than Jackson claimed for psychologizing his. All we can at present say is that the data in each field are logically consistent within the theory of the other.

In another group of neuroses, the obsessive compulsive, the patient is psychologically crippled. He has abilities he can not use. Again the activity of the emotions has so affected him that he is less of his "higher self," than he can be, i.e. not living his life at the evolutionary level which his brain equipment makes possible, as psychological tests clearly show. There is interference with or blocking of the higher functioning centers, those that produce the higher intelligence. But as the centers which differentiate, they are the ones also with which we know values, and which integrate our abilities towards the pursuit of values. This is ego, which is to say that the impairment characterizing these neuroses is impairment of the ego. This precisely is the psychoanalytic theory. Fenichel generalizes:

> "In all psychoneuroses the control of the ego has become relatively insufficient," (4).

So the losses which in the Jacksonian model would be located in the highest evolutionary levels, where Jackson sees the "finest sentiments" residing, are ego losses.

The behavior manifestations in the two great groups of the "functional" psychoses, the affective and the schizophrenias, can also be understood and hypothesized within the framework of either of the two theories.

In a depression the person can not grasp connections which he formerly could. His field of vision is limited. Thought content and interests are channelized into his personal and anguished preoccupations. The whole functioning person is clearly less than he was before the illness. The oppressive feelings have affected his reasoning ability and his judgment. By the Jacksonian hypothesis the thinking which he produces is that which is possible for as much of his mental ability as the overwhelming melancholy has not hamstrung. The ego-affect equilibrium has been seriously altered, against the ego, with pathologic effects to the person as a whole. And now we are again talking Freudian terminology. The difference is of course that the analysts orient themselves around the patient's personal needs: what in his experience as human being effected the imbalance? Jackson, neurologist *par excellence,* remains impersonal. He is concerned with the function of brain tissue, whatever may be the human needs that agitate the person.

In the manic attack, diametrically different though the patient appears as compared with what he is like in his depression, the structure is the same. The ego-affect balance has shifted, violently. The only, but critical, difference is in the quality of the affects. The emotions are in possession of the person. His judgment has fled and with effects contrary to that in the depression. His flighty attention,

unchecked flow of speech, exaggerated good spirits, misperceptions of himself, these again are the work of as much of his brain equipment as can still function. This is what is left to his personality's structure and is the present whole person. The intellectual control of which the patient is known to be capable is lost and the subintellectual processes are liberated. Adult standards which once had been learned are now discarded. The ego is submerged.

Similarly in the schizophrenias the gross distortions of reality, distortions though they are, are still projecting such intellectual functioning as is available to the patient. The fantasies and elaborate delusions are evidence that there is enough intact tissue to fabricate this dream world and the dereistic symptoms. The irrealities permit inference that to that extent the critical functioning of the higher brain centers is suspended. Similarly the clearly inadequate or inappropriate responses tell something of the ebb and flow of the feelings in the patient. The amount of reality distortion, the living in the fantasy, the emotional disorderliness, is a picture again of the net personality remaining in function, or conversely, the extent to which more infantile levels of the personality are again ascendant. This is the whole person presently remaining. In psychodynamic terms, it is regression. The ego, that capacity to know reality, to discriminate values, has lost stamina, or has fully given up its adult position. But ego, as conscious intellectual activity, is resident in the higher differentiating brain centers according to the Jacksonian hypothesis. So again psychodynamic phenomena can be pictured in the neurologist's design.

A paragraph from Grinker's paper summarizes the convergences in the two disciplines as seen in the several levels of illness. Thus

"In the psychoneuroses there is a functional paralysis of the Ego concomitant of cortical activity resulting in the release of autoplastic regressive psychological concomitants of lower level activity to a large extent exteriorized through the vegetative nervous system. In the psychoses regression is deeper both neurologically and psychologically," (7).

Most important with regard to the two clinical theories is that the reasoning rests on overtly observed behavior data, and on much verification. The evidence which has been accumulating these past two generations, and probably longer, lends weighty support to both Jacksonian and the Freudian hypotheses.

III

I have gone to some length in my exposition of these two major concepts, one neurologic and one psychologic, because of the orientations which they provide as to what the whole personality is. Each amounts to being a definition which the "scientific" psychologist can attempt to retrace with his own techniques, his psychological tests. The two theories give him intellectual direction along which to try his gadgets and so to subject the results to the critical checks which he includes in his scientific repertory. Secondly, to the members of this Society, concerned as we are with projective tests and with the potential in such tests for being scientifically valid, Freud's and Jackson's concepts have a more incisive interest. And this is it. Speaking for the one test with which I am most especially acquainted, how do Rorschach test results fit in with clinical theory? Can personality structures obtained with this test be translated into clinical language? Do its findings make clinical sense?

The answers to these questions, whether for the Rorschach or for any other test, can only be given by experiment. The results must verify the reasoning. Furthermore these results must first be interpreted independently and entirely by theory underlying the test. In the case of the Rorschach test we have operated with certain as-

sumptions beginning with the work of Hermann Rorschach himself (10). What these are has been stated by numerous writers, and two broad principles are emphasized, whatever differences there are among us as to technical detail. One is the generic significance of certain kinds of associations: e.g. the bright colored determinants as projecting out the nuances of the pleasurable emotional experience; shading determinants as arising out of unhappy mood experience; the movement response, that most original and exciting of Rorschach's discoveries, as communicating unconscious needs in the patient, some from dream level. There are the several response categories in the intellectual sphere with what they tell us about the patient's ability to call on his personality resources and to integrate them, to control himself—projecting out ego. In an earlier paper (1) I showed the essential equivalence of these broad Rorschach test significances to personality trends, as well as the possibility of translating the inferences from Rorschach test findings and their interrelations into the constructs of Jackson and of Freud.

The second broad principle in Rorschach test personality theory is that a human personality is multidimensional and that the whole personality as it is seen in function in any one moment is a net product of the interacting psychologic forces composing it. The problems of verification when working with this kind of a test are therefore of two kinds. One is to test out Rorschach's assumptions concerning the generic significance of the component variables in his instrument. Second it is necessary to test the validity of the findings for each whole personality: how accurately, as judged by non-Rorschach test formulation, does the instrument describe any one person? Efforts at verification have been going on, beginning soon after publication of the *Psychodiagnostik* (10) and in mounting crescendo within the past two decades. In the main these have focused on the component variables. Concerning these I shall not now dispute. Much has been written purporting to refute, and much to confirm the claims concerning the generic significance of e.g. color, M, shading, F plus, perceiving wholes or parts of the blots, and the others. The statistics here employed are those of probability, quite appropriately for this much of the problem, the nomothetic approach. But can we apply these statistics to the datum, the human personality, which is an interaction of the forces in these separate variables? to the individual conceived of as a combination term? Since these psychologic forces have the personality value which they do because they are functioning within a whole field of forces—here Kurt Lewin's (9) concepts come to mind naturally — what happens to any of these variables when one is extracted out of the entire? Are we by sieving them out of the personality dissipating the very phenomena we are interested in studying? As a parallel, there is that simple experiment of our high school physics. We pass a ray of white light through a prism and we see the well known component colors: violet, indigo, blue, green, yellow, orange, red. Is any of these colors, as extracted through the medium of the prism, the same physical or psychologic event when co-functioning to make the white light ray? Is it not rather necessary to do research on the white light rays as combinations of violet, blue, yellow, red and the others if we want to know how these components function in combination and as the new unit which they compose?

Study of the whole personality sets up a new challenge to statistical science. Fisher in a recent article (5) points with justifiable pride to the important role which statistics have played in the wondrous growth of science. However, in one sector the

advance has been slow. This is in the field of the whole psychologic individual as such. Yet the attempt is being made. For one example of a statistical approach to the human personality, I make reference to the research in schizophrenia in which I am currently engaged. My technique is Stephenson's Q (11). I am aware of the critiques that are being directed against this technique and that my results must be taken with the reservations that are dictated by the possible flaws in the Stephenson logic. Still our results, within the range warranted by the method, have the following import for the investigation of schizophrenia and personality in general.

(1) The research used operational or quasi-operational descriptions of schizophrenic behaviors, i.e. it started with the outer "sense data" of schizophrenia.

(2) It subjected these operational statements to the impersonal mathematical treatment involved in correlating and factor analyzing.

(3) When our statistician associates in the research had finished their factoring, we examined the clusterings of traits, i.e. the personality types or patterns that were derived out of the statistical processing. We then found that

(4) We had personality structures consistent with the Freudian personality hypothesis. The ego-affect equilibrium, the degree of domination by "lower" over "higher" processes, the regressive intellectualizing or fantasying, the inhibiting or repressive defenses,—these are the structural configurations we abstracted out of our Rorschach test findings interpreted in accordance with Rorschach test theory. Table I shows the conceptual schema by which the persons in our research can be described. These constructs are in psychodynamic terms, these being the terms in which we carried on the research, entirely psychologic. Thus our experiment, in which conclusions are drawn from Rorschach test findings, yields personality constructs congruent with those of the Freudian hypothesis. To the extent that the psychodynamic construct is sound, there is basis for inferring that the Rorschach test logic is founded in fact. Since this logic is built out of the assumptions as to the generic significances of the test's major response categories, these significances appear to be, in so far, supported. Then I point once again to the convergence between the Jacksonian and the Freudian constructs which adds that much spot of comfort to the Rorschach test premises.

TABLE I—Conceptual Scheme of Factors in Schizophrenia*

Theoretical Component	Factor	Level of Manifestation	
A. Defense Organization	I′	a. Withdrawal	b. Constriction
		c. Pathogenic	(d. Balanced)**
B. Intellectual Functioning	II′	a. Orderly	b. Disrupted
C. Fantasy Activity	III′	a. Autistic	b. Regressive
		c. Little or none	(d. Creative potentially)**
D. Social Adaptation	I″	a. Self-absorption	b. Self-deprivation
		c. Restitutional	(d. Constructive life objective)**
E. Emotional State	IV′	a. Lability	b. Fixed tone
			(c. Controlled release)**

* Reproduced from the monograph reporting this research (2) by permission of the publishers.

** Levels developed in research following publication of the monograph.

IV

Now for my third thesis. It grows out of the thinking, today current and vigorous, concerning scientific method itself. Scientists are inspect-

ing their own methods and as a major task in these inquiries, their own intellectual processes. It is not enough to march starry-eyed in the name of Science. They want to know what they are themselves doing intellectually, the semantic references of the language they use, the possibility of testing these apparent significances, the limit on what can be tested out. It is some of this literature that I want to cite briefly and selectively. We will then see how this reasoning applies to the clinical theories (Freud, Jackson) and to the Rorschach test experience.

In a paper carrying the title "Science and Complexity" Weaver (13) brings into high relief the scientific issues which living things present in contrast to those in which the physical sciences have made their progress. The latter prior to about the year 1900 have experimented with two-variable problems which Weaver calls "problems of simplicity." To be sure, as he points out, the physical sciences made possible those marvels which are the commonplaces of our every-day life, the telephone, radio, air travel, high fidelity sound reproduction. But,

"The significant problems of living organisms are seldom those in which one can rigidly maintain constant all but two variables. Living things are more likely to present situations in which a half-dozen, or even several dozen quantities are all varying simultaneously, and in subtly interconnected ways. Often they present situations in which the essentially important quantities are either non-quantitative, or at any rate eluded identification or measurement up to the moment. Thus biological and medical problems often involve the consideration of a most complexly organized whole," (13).

The next step was again taken by the physicists. They developed, with the help of the mathematicians, powerful techniques of probability theory and of statistical mechanics, and were now able to tackle "problems of disorganized complexity." In these the "number of variables is very large," but "the system as a whole possesses certain orderly and analyzable average properties," (10). That is they deal with probability for large numbers of cases, the nomothetic approaches. Useful as these techniques have been in extracting some of the fundamental laws of science, e.g. thermodynamics, motion of atoms, of the stars, they still leave untouched what Weaver calls "a great middle region which science has as yet little explored or conquered."

"What makes a primrose open when it does?" he asks in the first of a series of questions all of which lead to his conclusion,

"They are all problems which involve dealing simultaneously with a *sizable number of factors which are interrelated into an organic whole.* They are all, in the language here proposed, problems of *organized complexity,*" (13).

To the student of individual human behavior this is a welcome pronouncement. We have seen our colleagues piling data on data for many decades now. Research reports accumulate in the psychology tomes and this is not to count the countless unpublished researches. The number of journals is ever burgeoning yet the publication lag which these new organs are intended to take up, far from diminishing, is growing at an ever faster rate. And quoting that acid observer of human life, Eccelesiastes, "of making many books there is no end." Yet all these data piled on data are not yet knowledge. The fault has been tersely stated by von Bertalanffy:

"Science is not a mere accumulation of facts; facts become knowledge only when incorporated into a conceptual system," (12).

Too many facts, too much data actually hamper the discovery of theoretical schemes, he notes a bit further.

There has been thus much unorganized accumulation, and psychology had at its inception as a science been limiting itself to problems of simplicity. Fascinated by the successes of the physical sciences it imitated them and kept its nose to the grind-

stone of the two variable experiment. More recently it has been climbing out of this confining channel and daring to come to grips with what looked like problems at Weaver's second level, those of disorganized complexity.

Meanwhile it develops that we are really fascinated with still another question, the one that Weaver asks, why does the evening primrose open when it does? And we ask further what is happening when you or your neighbor sees a primrose just opened up? or smells it? What is this total human experience? And the multiple others that are so human. This is that third level in Weaver's exposition, that of organized complexity in which many variables interrelate to issue into the observed whole.

Psychology in the strictest scientific sense has so far been sterile in this field of whole personality theory. The two fruitful concepts that I have described above, those of Freud and of Jackson are in neither instance product of the laboratory or of the academic hall. It is a philosopher of science, one who has much devoted himself to the problems confronting psychology, Feigl, who points to what he calls the "regionalism" of psychological theories and to the small success which the theorists in psychology have so far had in their search for a higher integration.

Feigl is himself apparently not pessimistic in his outlook for psychology. His paper, entitled "Principles and Problems of Theory Construction in Psychology," is a critical examination of the problems which psychologists need to cope with in relation to personality. He sees our time as ripe for an "Anschluss" between theories emerging in the different disciplines.

> "Analogical or abstract models of the Freudian or Lewinian type will from now on have to be appraised in terms of the isomorphism they attain with the corresponding structures and processes certified by the physiological approach. There is no question that the mythological fictions as well as the hydraulic models of psychoanalytic theory have been immensely fruitful heuristic devices. Similarly, it may be admitted that Lewin's topological and field theoretical concepts have stimulated not only a certain way of talking in the psychology of motivation but also a great number of highly original and significant experimental investigations. But from a critical methodological point of view there are serious doubts as to whether these types of theorizing amount to more than a tentative groping for the laws and concepts which will ultimately have to be provided by the molecular approach," (3, pp. 206-207).

Most revelant to my present thesis is his exposition of "individual facts" as "subsumed under empirical law." To this I juxtapose his discussion of "dispositional properties" as explanatory and his transition "from surface traits to source traits or factors in personality psychology." In this pointing up of surface traits and source traits he is offering what I see as theory helping us to understand what happens in any of the investigations in personality to which I have referred in this communication. Jackson starts by describing the overtly visible motor discharges of epilepsy, or aphasia, or chorea, or a paralysis. These are the surface traits. From them he infers processes going on in certain areas of the brain, the source traits. In Freud the symptom is the surface trait—blushing, boasting, aggression, sexual impotence, intellectual disturbances. From these he reasons to the psychologic dynamics: repression, conversion, identifications, projections, and the others; i.e. the source traits. In the Rorschach test we see the person associating with the varieties of response categories, wholes or details, or rare details, color, shading, movement, i.e. the surface traits. We reason from these to certain affective and intellectual source traits.

Now it is only in so far as investigations by two of the three or by all three methods confirm one another that the inferences from surface traits to source traits can be considered to have validity. Unless so we are just bandying so many long scientific words

that inflate our egos, words that are only "verbal magic and verbal sedatives," (Feigl). He notes in this context that "to anchor our concepts and constructs in the data of observation, should in this age of modern science be so banal and obvious as to be superfluous," (3, p. 202). This is an axiom which one should hardly need to repeat today. Yet I digress at this point to say that it is, unfortunately, very necessary. Much Rorschach test interpretation is sheer verbalism and giving in to the seduction of magic. The primitive rules we learn in our first weeks in the psychology laboratory are blithely disregarded when it comes to using the Rorschach test. The temptations are no doubt great, it is so easy: only ink-blots. So one may shut his eyes and interpret as a laying on of hands or a speaking with tongues, or what have you. And so long as Rorschach or other personality testing disregards the basic rules of verified method, so long will they yield results that will elicit raised eyebrows from our colleagues in psychology.

Returning to the source traits: these are not yet the whole personality. They are the s o u r c e processes (whether neurologic or psychologic) that produce the surface traits. Investigating at this level, we would still use the nomothetic approach and rely on the laws of probability. We are dealing here with the generic processes, whether affective or intellectual. That is, we are still at the level of unorganized (rather than disorganized) complexity. But in any person the processes do interact, and configure into the whole as unit system. Here we are dealing with the organized complexity of Weaver: the primrose that opens; or you or I smelling the primrose.

In any event, here we are again, after Jackson viewing the individual as he functions with the net total of brain function available to him, and inhibited or permitted; and after Freud in the net equilibrium of ego-affect forces, released or controlled; and thirdly in that balance of psychologic stresses which we see projected in a Rorschach test protocol. Table II shows these convergences in synopsis.

This then is my third thesis,—the convergence of a logic of science with the theories inherent in the two clinical approaches and that in the Rorschach test. My own conclusion from these convergences is that it is possible to have a scientific approach to the study of personality, one consistent with clinical theory and with scientific logic. The psychologist is to be sure today between the Scylla of being too much scientist, and throwing the personality into the sea; or the Charybdis of promising everything in predicting a personality course, having thrown away the scientific rules which are his pilot wheel and so not steering at all. However the narrow straits can be negotiated. Feigl well summarizes the situation:

"The only thing psychologists can do in

TABLE II—Personality Structure in Human Behavior and in the Rorschach Test in the Light of Theory. Overview.

	In the field of behavior	In the Rorschach test
The raw data	The manifest phenomena in life generally; clinical; experimental.	The scored variables of the test (W, F+, M, C, and the others.)
The source forces (or traits, Feigl)	The separate psychologic processes: affective, intellectual.	Projected affective and intellectual traits.
The individual as whole system	The interaction of the processes in the unit personality; or organized complexity (Weaver).	Personality theory. Higher-lower brain levels (Jackson). Ego-id (Freud). Field forces (Lewin). Balance of psychologic stresses

molar behavior studies is to steer a middle course between recklessly issuing promissory notes and overcautiously but unfruitfully restricting themselves to purely operational procedures. They need not apologize for being unable to provide strict operational definitions for every concept used. Molar behaviorism cannot avoid these ambiguities and indeterminancies. A strict one-to-one correspondence of indicator variables and intervening variables can be achieved by arbitrary definition — but the severely limited success of the prediction and explanation of behavior on this basis shows convincingly that we must search by whatever means available for a more complete frame of concepts and laws. It stands to reason that this can only be achieved through the method of existential assumptions, i.e., through the introduction of hypothetical constructs," (3; pp. 199-200).

This states for me the frame of reference within which I see the psychologist most fruitfully working the field of personality. Also, we have the constructs, — those of our two clinical theorists. Each had a sharply comprehended scientific objective and states it explicitly. I cite Jackson again

"What we call the scientific investigation of insanity is really an experimental investigation of mind; and in this regard the slightest departures from a person's standard of mental health are to be studied," (8; p. 4).

And,

"We require for the science of insanity a rational generalization which shall show how insanities, in the widest sense of the word, including not only cases specially described by alienists, but delirium in acute non-cerebral disease, degrees of drunkenness, and even sleep with dreaming, are related to one another. Dreaming is for such purpose as important as any kind of insanity . . . We have to find some fundamental principle under which things so superficially different as the diseases empirically named hemiplegia, aphasia, acute mania, chorea, melancholia, permanent dementia, coma, etc., can be methodically classified," (8; pp. 4-5).

Freud sums up his general hypothesis even more tersely and with all clarity:

"The division of mental life into what is conscious and what is unconscious is the fundamental premise on which psychoanalysis is based; and this division alone makes it possible for it to understand pathologic mental processes, which are as common as they are important, and to coordinate them scientifically," (6; p. 9).

In a word, the concepts which guided Jackson and Freud were intended by them to be consistent with a general philosophy of science. But concepts can only be tested out with tools. Rorschach's test I see as such a concrete tool which enables us to break up the personality into its component elements, much as the prism breaks up the light ray, at the same time that it still leaves for study the personality itself, whole.

REFERENCES

1. Beck, S. J. Error, symbol and method in the Rorschach test. *J. abn. soc. Psychol.*, 1942, *37*, 83-103.
2. Beck, S. J. *The Six Schizophrenias*. Research Monogr. No. 6. Amer. Orthopsychiatric Assoc., New York: 1954.
3. Feigl, H. Principles and problems of theory construction in psychology. *In Current Trends in Psychological Theory*. Pittsburgh: Univ. Pittsburgh Press, 1951. Pp. 179-213.
4. Fenichel, O. *The Psychoanalytic Theory of the Neuroses*. New York: Norton, 1945.
5. Fisher, R. Expansion of statistics. *Amer. Scientist*, 1954, *42*, 275-282.
6. Freud, S. *The Ego and the Id*. (Joan Riviere transl.) London: Leonard and Virginia Woolf and Institute of Psychoanalysis, 1927.
7. Grinker, R. R. A comparison of psychological "repression" and neurological "inhibition." *J. nerv. ment. Dis.*, 1939, *89*, 765-781.
8. Jackson, H. *Selected Writings*. London: Hodder, 1932.
9. Lewin, K. *Field Theory in Social Science*. Ed. D. Cartwright. New York: Harper, 1951.
10. Rorschach, H. *Psychodiagnostik: Methodik und Ergebnisse eines wahrnehmungsdiagnostischen Experiments* (ed. 2.). Bern and Berlin: Huber, 1932. (Transl. P. Lemkau and B. Kronenberg.) New York: Grune and Stratton, 1942.
11. Stephenson, W. *The Study of Behavior*. Chicago: Univ. Chicago Press, 1953.
12. von Bertalanffy, L. *Problems of Life*. New York: Wiley, 1949.
13. Weaver, W. Science and complexity. *Amer. Scientist*, 1948, *36*, 536-544.

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Reliability of Rorschach Interpretations [1, 2]

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PROBLEM

"The ultimate test (of the Rorschach) is, given a Rorschach record, will every examiner who scores and interprets it arrive at approximately the same conclusions? Further, will those conclusions coincide with other criteria, either clinical or experimental?" (8, p. 295). It is the answer to the first question, put into this form by Hertz and Rubenstein, which the present investigation seeks.

The experimental problem of the present work is whether or not, and to what extent, the language used in a written Rorschach interpretation can discriminate one patient from another. Or, similarly, can one psychologist read a "blind" Rorschach interpretation written by another psychologist and know which patient has been described? Further, does the level of interpretation used in the psychological report influence the exactness of patient description? Does the Rorschach protocol alone provide enough information to allow the psychologist to describe differently two very similar patients? Is the "Rorschach talent" of the particular clinical psychologist the most important variable underlying the communication or comprehension of a Rorschach interpretation?

It is felt that these questions are relevant to the general topic of the reliability of Rorschach interpretations. This area has been the concern of previous investigators (3, 7, 8, 12, 14, 15) who have employed various experimental methods and whose results, in summary (4, p. 13), tend to support the notion that the Rorschach can be interpreted reliably, to one degree or another. However, these studies suggest the need for a more comprehensive evaluation of the reliability of Rorschach interpretations which would involve the co-operation of a large number of judges and which would take into account previously ignored variables. The present study attempts to meet this need.

METHOD

The *Matching Method,* as originally introduced to the area of personality evaluation by Vernon (16, 17) was the experimental method of choice. Notwithstanding its shortcomings, which Cronbach has emphasized (1, 2), the matching experiment permits a test of the reliability of clinical-type Rorschach interpretations. A desire to mimic, so far as possible, present-day clinical usage of the Rorschach dictated the experimental method and procedure used in the present investigation.

In general terms, the method consisted of having competent clinical psychologists score[4] and interpret "blind" Rorschach protocols and, later, having these same psychologists attempt to match each others' written Rorschach interpretations against the original Rorschach protocols.

Sample of Judges

Twenty-seven clinical psychologists

[1] The present paper is an abstract of a Ph.D. dissertation (4).

[2] The authors wish to give acknowledgment to those twenty-seven clinical psychologists who generously contributed an inordinate amount of time and services in acting as judges in the present investigation.

[3] Now with the Mental Hygiene Consultation Service, Fort Bliss, Texas.

[4] The study included an assessment of the inter-judge reliability of Rorschach determinant scores though these results are not included in this paper. For these findings the reader is referred to the dissertation (4).

TABLE I—Design of the Experiment; Synopsis of Clinical Experience of Judges.

LANGUAGE LEVEL VARIABLE

HOMOGENEITY - HETEROGENEITY VARIABLE	Diagnostic	Psychodynamic	Combination
Homogeneous Group	M: 1. VA Trainee; 2. No; 3. 3; 4. 0; 5. 150; 6. None	V: 1. VA Trainee; 2. No; 3. 2; 4. 0; 5. 100; 6. 5	D: 1. VA Staff; 2. Yes; 3. 15; 4. 6; 5. 500; 6. 1500
	N: 1. VA Trainee; 2. Yes; 3. 2½; 4. 1; 5. 150; 6. 50	W: 1. Univ. Staff; 2. Yes; 3. 6; 4. 1; 5. 200; 6. 50	E: 1. State Hosp Staff; 2. Yes; 3. 4½; 4. 1; 5. 125; 6. 15
	O: 1. VA Staff; 2. Yes; 3. 5; 4. 2½; 5. 150; 6. 50	X: 1. VA Staff; 2. Yes; 3. 5; 4. 3; 5. 200; 6. 150	F: 1. VA Trainee; 2. No; 3. 3; 4. 0; 5. 125; 6. None
Random Group	J: 1. VA Trainee; 2. No; 3. 3; 4. 0; 5. 100; 6. None	A: 1. VA Trainee; 2. No; 3. 4; 4. 0; 5. 100; 6. None	S: 1. VA Staff; 2. Yes; 3. 6½; 4. 4½; 5. 130; 6. 240
	K: 1. VA Staff; 2. Yes; 3. 9; 4. 3; 5. 250; 6. 150	B: 1. VA Staff; 2. Yes; 3. 8; 4. 6; 5. 400; 6. 1200	T: 1. State Hosp Staff; 2. No; 3. 9½; 4. 0; 5. 175; 6. 15
	L: 1. Army Intern; 2. No; 3. 2; 4. 0; 5. 100; 6. None	C: 1. VA Staff; 2. Yes; 3. 3; 4. ½; 5. 100; 6. 20	U: 1. VA Staff; 2. Yes; 3. 6; 4. 2; 5. 200; 6. 60
Heterogeneous Group	P: 1. VA Staff; 2. Yes; 3. 9; 4. 6; 5. 500; 6. 2500	G: 1. Univ. Staff; 2. Yes; 3. 4; 4. 1; 5. 150; 6. 10	A′: 1. VA Staff; 2. Yes; 3. 6; 4. 2½; 5. 500; 6. 720
	Q: 1. VA Trainee; 2. No; 3. 4; 4. 0; 5. 125; 6. None	H: 1. VA Trainee; 2. No; 3. 4; 4. 1; 5. 150; 6. 20	B′: 1. Army Staff; 2. Yes; 3. 3; 4. 2; 5. 200; 6. 100
	R: 1. Army Staff; 2. No; 3. 6; 4. 4; 5. 1100; 6. 400	I: 1. VA Staff; 2. Yes; 3. 5; 4. 1½; 5. 100; 6. 50	C′: 1. State Hosp Staff; 2. Yes; 3. 6; 4. ½; 5. 400; 6. 25

LEGEND:
Letter in each rectangle designates judge
1. Judge's professional position
2. Possesses Ph.D. degree in psychology?
3. Years of clinical experience with Rorschach
4. Years of supervisory experience with Rorschach
5. Approximate No. of Rorschachs administered
6. Approximate No. of Rorschachs supervised

(22 males and five females) participated as judges in the study. While there was considerable range in the amount of clinical experience and "Rorschach prestige" within the group of judges, all 27 met the criteria demanded by Kelley (10) when he listed how much training is necessary before an individual may be considered competent to do good Rorschach work. Except for two[5] of the judges, all were currently, or had been previously students of Dr. Bruno Klopfer and were trained and experienced in the Klopfer method of Rorschach analysis (11). Table I gives a synopsis of the professional status and Rorschach experience of each of the 27 judges at the time the data were gathered.

[5] In their clinical experience these two judges had become familiar with the Klopfer method through colleagues and through Dr. Douglas Kelley personally, but originally they received their Rorschach training from exponents of Becks' method.

Sample of Patients

The Rorschach protocols of 18 male hospitalized neuropsychiatric patients who ranged in age from 20 to 41 years provided the source for the judges' written Rorschach interpretations. These patients were divided into three groups of six patients each, termed, respectively, the *homogeneous, random,* and *heterogeneous* group. The *homogeneous* group was composed of six very bright, incipient paranoid schizophrenics, ranging in age from 25 to 41 years. Wechsler-Bellevue I. Q. scores were 130 or above. The *random* group was composed of six patients whose names were randomly chosen from the psychological test files at a neuropsychiatric hospital. The age range was 24 to 36 years: I.Q. range, 96 to 130; diagnoses were somewhat varied. The *heterogeneous* group ranged in age from 20 to 41 years. Wechsler-Bellevue I.Q. scores ranged from 81 to 125, and the patients varied in the chronicity of their illness. The six patients in this group had different diagnoses: organic, acute schizophrenic, character disorder, hysteric, manic-depressive in depressed phase, and obsessive compulsive.

Rorschachs on each of the 18 patients had been administered by various examiners, all of whom were trained according to the Klopfer method of Rorschach administration. Diagnoses were on the basis of the psychological report accompanying the test records.

Procedure

Six Rorschach protocols were presented to each of the 27 judges, who scored each response for determinants and who wrote a "blind" Rorschach interpretation (psychological report) on each case. Data on each patient included the entire Rorschach protocol, the location scores with accompanying figure-location sheet, and the sex of the patient.

In writing their psychological reports on each case, the judges were instructed to keep their reports between 150 and 300 words in length. Also they were asked to describe the patient rather than the protocol so as to avoid direct references to the raw data of the protocol which might later be used as "give-away" cues in the matchings.[6] One-third of the judges were instructed to write reports strictly in terms of *diagnostic* language, one-third strictly in terms of *psychodynamic* language, and one-third in terms of a *combination* of diagnostic and dynamic language.

After all of these data were gathered, each judge was contacted a second time for the purpose of performing the matchings. The judges' task in the matching phase of the experiment entailed an attempt to match two sets of six reports each, written by two other judges under the same set of experimental conditions, to the original six protocols which the judge himself had interpreted. To perform this task, each judge had at his disposal (a) the same six Rorschach protocols he had originally scored and interpreted, plus the corresponding psychological report which he had originally written to the case, (b) two sets of six psychological reports each, written by two other judges, and (c) any work notes which he may have made during the process of scoring and interpreting the protocols.

Experimental Design

A two-way factorial design determined the method by which the Rorschach data were originally distributed to the judges and also determined the method by which the matching phase of the experiment was executed. The two principal variables under

[6] In spite of these instructions a few statements crept into the reports which the authors felt would have provided direct cues when it came to matching report against protocol. Such statements were deleted from the report before incorporating it into the matching phase of the experiment.

consideration were (a) the level of interpretation made in the reports, classified according to *diagnostic, psychodynamic,* and *"combination"* interpretations, and (b) the variability of the patients within the group of Rorschach protocols interpreted, classified according to *homogeneous, random,* and *heterogeneous* groups of patients. The additional variable of "judge experience" was controlled as well as possible by the method of stratification.

Table I represents the design of the experiment. The two main variables are classified according to the three rows (homogeneity-heterogeneity variable) and the three columns (language level variable). There are nine cells in the design and three judges per cell, which means that judges in groups of three performed identical tasks. For example, Judges M, N, and O each wrote diagnostic reports to the six Rorschach protocols on the homogeneous group of patients. And so on.

In the matching phase of the experiment, each judge matched the reports written by the two other judges in his cell to the Rorschach protocols. For example, Judge M matched the six reports written by Judge N to the six Rorschach protocols and he also matched the six reports written by Judge O to the six Rorschach protocols. Within the same cell, Judge N matched the six reports written by Judge M to the six Rorschach protocols and he also matched the six reports written by Judge O to the six Rorschach protocols. Likewise, Judge O matched the six reports written by Judge M to the six Rorschach protocols and he also matched the six reports written by Judge N to the six Rorschach protocols. And so on throughout the design.

The results were scored in terms of the number of correct matchings made on six events. Each of the 27 judges performed two sets of matchings (six events in each set) so that each judge received two scores. A total of 54 sets of matchings (or 324 discrete matchings) was made in all. The design allowed for the study of the following effects: (a) The statistical significance of the matching performances of individual judges; (b) The statistical significance of the matching performances of groups of judges; (c) The effect of language level upon number of correct matchings; (d) The effect of homogeneity-heterogeneity of patients within a group upon number of correct matchings; and (e) Individual differences among judges in their matching performances.

RESULTS

Table II presents the results on all of the matchings. The results are presented according to the pattern of the experimental design as previously set forth in Table I. The contents within each of the 27 rectangles indicate each individual judge's matching performances. The number of correct matchings with their corresponding probability values are listed for each judge and for groups of judges.

To illustrate the facts presented in Table II, let us exemplify Judge M's results. First, let it be noted that Judge M wrote diagnostic reports to the protocols of a homogeneous group of patients, as did Judge N and Judge O. The series of letters A B C D E F, appearing in the center of Judge M's rectangle, refer to the case numbers of the reports as written to the protocols by Judges N and O. The series of letters following N= and O= indicates the manner in which Judge M matched the reports written by Judge N and Judge O, respectively. Hence we see that Judge M matched the reports written by Judge N in the following manner: report on Case A was matched to Case D, report on Case B was matched to Case A, report on Case C was matched to Case B, D to E, E to C, and F to F. Judge M, therefore, matched one of Judge N's six reports correctly. This is so indi-

TABLE II — Results of Matching and Corresponding Probability Values

cated by the number "1" which follows the presentation of how the reports were matched. One correct matching out of six events yields a probability value of .632 which is indicated after the number "1." Judge M matched the reports written by Judge O in the following manner: report on Case A was matched to Case A, report on Case B was matched to Case C, C to D, D to E, E to B, and F to F. This time Judge M scored two correct matchings out of six and is credited with a probability figure of .265. The probability figure of .47, which appears between and slightly to the right of the two probability values for each matching performance

considered singly, indicates the composite probability of the two matching performances (i.e., 1 out of 6 and 2 out of 6) made by Judge M. (9)

Each rectangle in the design presents analogous information to the one just described. The judge who matched the two sets of reports is indicated, the manner in which he matched each set of reports written by the two other judges in his cell is presented, the number of correct matchings scored on each series of (six) matchings is given with the corresponding probability figure, and the composite probability value for each judges' two sets of matching performances is stated. Case numbers vary depending upon the group of protocols interpreted. The large case numbers indicate that a correct matching has occurred while small case numbers indicate a mismatching.

The enclosed figure in the lower right hand corner of each cell gives the composite probability value of the three judges' performances in that cell. For example, the figure $> .20$ is the probability value for M, N, and O's performances considered as a group. (9)

Summary information on the performances occurring in each of the horizontal arrays is presented to the extreme right of the table and information on the performances occurring in each of the vertical arrays appears at the bottom of the table. The probability values listed here refer to the composite probability of the nine judges' performances in the corresponding array. The composite probability value for all 27 judges' performances is listed together with the grand mean, grand median, and grand mode in the lower right hand corner of the table.

Feller, in his Table 1 (5, p. 68), lists the probabilities of n correct guesses in calling a deck of N distinct cards. These probabilities were applied to the above data where $N = 6$ and were summed so that the probability values for a single set of matchings in our Table II denote the probability of getting n, or more, correct matchings out of six events. In Table II it will be noted that three hits or better yield a probability of .078, while four hits or better yield a probability of .022. Thus a matching performance significant at the .05 level or better requires not less than four hits. The composite probability values were derived from Fishers' (6) method of transforming p values into chi squares in order to arrive at a composite p value. This method is discussed in detail by Jones and Fiske in a section of their paper entitled "The chi square model" (9, pp. 376-377).[7] The resulting composite p values in the above data denote the probability of the corresponding multiple performances, or better performances, having occurred if chance alone were operating.

Individual Results

Of the 54 sets of matchings performed, only seven were perfect matchings (that is, 6 for 6). Eleven more sets of matchings were 4 "hits" out of 6 events. The remainder, 36 sets of matchings, yielded scores of 3 hits or less. Thus, the results from two-thirds of all the sets of matchings performed were insufficient to be termed significantly different from chance expectation, provided the .05 level of confidence is taken as the cut-off point between statistical significance and statistical non-significance.

Employing the same criterion of statistical significance (i.e., the .05 level), it can be noted from the results in Table II that 14 of the 27 judges, or 52 per cent, did significantly better than chance in performing their two sets of matchings. Thirteen of the 27 judges matched the reports

[7] The appropriateness of using this procedure for evaluating composite probabilities in the present material may well be questioned. A justification for its application is to be found in Datel (4, pp. 65-68).

written by other psychologists no better than might be expected if chance alone were operating.

Group Results

The composite probability of the total number of matching performances is statistically very significant ($p < .001$) for the entire group of 27 judges. However, the "average" number of hits for all the matchings is below 3: Grand mean = 2.7, grand median = 2.4, and grand mode = 2. Even if the largest of these three representative scores were to be considered as a typical matching result, it would not be considered as statistically significant.

Effects of Main Variables

Mood's distribution-free test (13, pp. 398-399) offered a method to ascertain if the number of correct matchings for a given array significantly exceeded those for another array. The results of the Mood analysis are presented in Table III. The number of correct matchings on the heterogeneous group significantly exceeded those on the homogeneous and random groups. There were no significant differences among the arrays of the language level variable, even though Table II shows that the matchings dealing with psychodynamic interpretations have the highest mean, median, and modal scores.

In view of the fact that but one level of the systematic variables yielded a distinct effect, namely, the heterogeneous group, it is desirable to examine the overall results when the bottom horizontal array of Table II is eliminated. We then find that only two of the remaining six cells, and only five of the remaining eighteen judges, yield a composite probability of .05 or better. Indeed, of the 36 matchings which constitute the reduced table, only five give four hits or better and thus are significant at beyond the .05 level. The composite probability of these 36 matchings is one which is associated with a students' "t" of 3.63 at 72 degrees of freedom. While this value is less than .001, it is to be compared with the probability of a "t" of 8.38 at 108 degrees of freedom which results when the array dealing with the heterogeneous group is included. It is thus seen that much of the reliability of Rorschach interpretations achieved in this experiment is contributed by interpretations of the protocols of the heterogeneous group of subjects.

Individual Differences

Though the experiment was not specifically designed to investigate the matter of individual differences in "Rorschach talent" among judges (since in no instance did the same judge perform under different experimental conditions), it is interesting to compare the performances of judges P, B and D with the performances of the judges (other than P) who had been assigned to the heterogeneous group of subjects. These three judges, in the opinion of the authors, are the most pre-eminent in Rorschach prestige of the total group of 27 judges used, yet only one of them, Judge P,

TABLE III—Significance of Differences Between Arrays in Number of Correct Matchings

Arrays	X^2	df	p
Homogeneous-Random-Heterogeneous	11.777	2	<.01
Homogeneous-Heterogeneous	11.235	1	<.001
Random-Heterogeneous	10.802	1	<.01
Random-Homogeneous	2.160	1	>.10
Diagnostic-Dynamic-Combination	1.309	2	>.40
Diagnostic-Dynamic	1.080	1	>.20
Diagnostic-Combination	1.080	1	>.20
Dynamic-Combination	.432	1	>.50

—who had been assigned to the heterogeneous group! — turned in a performance which was better than chance. Furthermore, every one of the judges who served in the heterogeneous group, "out-performed" the two prestigious judges who worked with the other groups of subjects. If there are individual differences in Rorschach talent among the judges, it is, in the present context, transcended overwhelmingly by the nature of the material.

DISCUSSION

One of the prerequisites for establishing the reliability of Rorschach interpretations is that one psychologist be able to recognize the Rorschach interpretation communicated by another psychologist as belonging to a particular Rorschach protocol. In performing their matchings, have our judges demonstrated this ability? If so, under what conditions have they done so?

It is apparent from the composite probability value of $<.001$ that the overall matching results in Table II are not distributed according to chance. The number of hits is greater than would be achieved from randomly matching cards. This means that too many of the 54 matching performances were significantly better than chance (18 performances yielded four or more hits). Expressed differently, there were too many of the 27 judges whose performance was significantly better than chance (there were 14 such judges). Thus the variability in the performances obtained in this experiment cannot be attributed exclusively to accident. We are to conclude that the results of some of the Rorschach matchings must be attributed to *systematic factors,* i.e., some of the judges in some of the situations were not behaving as "automata."

It is noteworthy, however, that most of the successful matching performances occur when the heterogeneous group of subjects is involved. The 18 matching performances which constitute this array yield an average of four "hits" per performance. Of the 14 judges whose performances were significant at the .05 level, nine were individuals who had been assigned to the heterogeneous group: i.e., the composite performance of each of the judges assigned to this group was significantly better than chance. The other five are scattered throughout the table. Thus it would appear that our judges can reliably recognize each others' Rorschach interpretations as belonging to the "correct" protocol when the protocols come from a very heterogeneous group of patients. When the protocols of more homogeneous groups of patients are interpreted, inter-interpreter reliability drops rather markedly. This, of course, is a finding which can very well be expected with a wide variety of diagnostic instruments.

Leaving the context of the experimental design proper, it is important to ponder the implications of the overall results. A study of the matching data reveals the fact that the number of mismatchings is greater than the number of correct matchings. Of the total of 324 discrete matchings, 148 are hits and 176 are incorrect. What has gone awry in the numerous instances of mismatchings?

When one judge fails to match the interpretations written by another judge according to the actual protocol used by that judge, several reasons suggest themselves to help explain this occurrence: (a) The judge who matched the report "saw" the protocol differently than the judge who wrote the report; (b) the judge who matched the report would have written the report differently than the judge who did write the report; (c) the report which the judge tried to match failed to differentiate one patient from another within the set of cases interpreted.

In the event of (a) or (b), above, the mismatching may be attributed to the fact that judges do not derive

common impressions or apperceptions about a patient from the patient's Rorschach protocol. To put it bluntly, the judges do not agree with one another. In terms of the problem of the present investigation, this would mean that "blind" interpretations stemming from a Rorschach protocol do not lend themselves to inter-interpreter reliability.

In the event of (c), above, additional factors come into play. For, under this circumstance, judges could very well be saying or thinking the same things about a patient from his Rorschach protocol, but unfortunately they say or think the same things about too many other patients within the set. This leaves the impression that the Rorschach simply does not provide enough information on a patient to allow the interpreter to describe that patient as different from other patients. Or could it be that clinical psychology, in general, does not yet have the necessary semantic equipment to set apart, in descriptive prose, one person from another?

An inspection of the content of the 162 written Rorschach interpretations (4, Appendix D) leaves the authors with the impression that much work needs to be done, not only with respect to increasing the reliability of Rorschach interpretations, but also with refining our techniques of verbal communication.

Summary

The study was concerned with an evaluation of the reliability of clinical-type Rorschach interpretations. "Blind" Rorschach interpretations were supplied by 27 clinical psychologists, competent with the Rorschach test, to the Rorschach protocols of 18 neuropsychiatric patients. The judges attempted to match each others' written Rorschach interpretations according to the pattern of a two-way factorial design, with one systematic variable being the level of interpretation made in the reports and the other the homogeneity-heterogeneity of the patients giving the protocols.

Fifty-two per cent of the judges performed matchings which were better than chance at the .05 level, while 48 per cent of the judges turned in matching results which were not credited as being statistically significant. Performing as a group, the 27 psychologists matched report against protocol at a high level of statistical significance ($p < .001$), though the average number of correct matchings for the 27 judges fell below the number of hits necessary for a single matching result to be considered statistically significant.

The results of the matchings on a heterogeneous group of patients were significantly superior to the groups comprised of more similar patients. There was no evidence favoring one level of interpretation over another in the written reports as regards inter-interpreter reliability.

The fact that 18 of the 27 judges achieved no better than chance performances and that the composite performance of the group of 27 judges as a whole was satisfactory leads to the tentative conclusion that a substantial majority of Rorschach reports have very little communication value, but that there is a large minority which achieve significant inter-judge reliability.

References

1. Cronbach, L. J. A validation design for qualitative studies of personality. *J. consult. Psychol.*, 1948, *12*, 365-374.

2. Cronbach, L. J. Statistical methods applied to Rorschach scores: a review. *Psychol. Bull.*, 1949, *46*, 393-430.

3. Cummings, S. T. An investigation of the reliability and validity of judgments of adjustment inferred from the Rorschach test performance. Unpublished doctors' dissertation, Univer. of Pittsburgh, 1950.

4. Datel, W. E. Reliability of interpretations and consistency of determinant scoring in the Rorschach. Unpublished doctors' dissertation, Univer. of California at Los Angeles, 1954.

5. Feller, W. *An introduction to probability theory and its applications.* Vol. 1. New York: John Wiley and Sons, Inc., 1950.

6. Fisher, R. A. *Statistical methods for*

research workers. (10th Ed.) London: Oliver and Boyd, 1946.

7. Grant, Marguerite Q., Ives, Virginia, and Ranzoni, Jane H. Reliability and validity of judges' ratings of adjustment on the Rorschach. *Psychol. Monogr.*, 1952, *66*, No. 2.

8. Hertz, M. R., and Rubenstein, B. B. A comparison of three "blind" Rorschach analyses. *Amer. J. Orthopsychiat.*, 1939, *9*, 295-315.

9. Jones, L. V., and Fiske, D. W. Models for testing the significance of combined results. *Psychol. Bull.*, 1953, *50*, 375-382.

10. Kelley, D. M. Requirements for Rorschach training. *Rorsch. Res. Exch.*, 1942, *6*, 74-77.

11. Klopfer, B., and Kelley, D. M. *The Rorschach technique.* New York: World Book Co., 1942.

12. Krugman, Judith I. A clinical validation of the Rorschach with problem children. *Rorsch. Res. Exch.*, 1942, *6*, 61-70.

13. Mood, A. McF. *Introduction to the theory of statistics.* New York: McGraw-Hill, 1950.

14. Palmer, J. O. A dual approach to Rorschach validation: a methodological study. *Psychol. Monogr.*, 1951, *65*, No. 8.

15. Ross, H. L. The sources and reliabilities of interpretations in Rorschach test analysis. Unpublished doctors' dissertation, Univer. of California at Los Angeles, 1953.

16. Vernon, P. E. The evaluation of the matching method. *J. educ. Psychol.*, 1936, *27*, 1-17.

17. Vernon, P. E. The matching method applied to investigations of personality. *Psychol. Bull.*, 1936, *33*, 149-177.

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A Statistical Study of Sex Differences On The Rorschach [1,2]

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PROBLEM

This study was concerned with the statistical analysis of personality differences between males and females as revealed by the Rorschach technique, and by a paper-pencil type questionnaire, the Guilford-Zimmerman Temperament Survey (3). The main objective of this study was to analyze the major factors measured by these two tests in order to determine those areas where definite sex differences may exist. The problem under consideration was broken down as follows:

(1) The analysis of personality differences between the total sample of males and the total sample of females.

(2) The analysis of personality differences of subjects separated according to an external masculinity-femininity score—the Guilford-Zimmerman M-F scale. This analysis was made on the data from four groups, referred to as:

a. "Masculine males"
b. "Non-masculine males"
c. "Feminine females"
d. "Non-feminine females"

Published research on the Rorschach has emphasized the standardization of certain diagnostic indicators and attempts at validation of this technique. Because of this, certain normative studies have been neglected, studies which might serve as future bases or foundations for research in this field. Without a clinically well-explored control group, in which manifestations of psychpathology do not obscure the test results, one cannot even hope to be able to track down the psychological significance of different types of responses. Only by having adequate normative data can work with the mentally ill, the maladjusted, etc., assume any real meaning. Granted that an individual must be studied as an unique personality, the clinician must have some objective and reliable frame of reference in order to evaluate the functioning of his subject. This can only be done through the accumulation and analysis of Rorschach records from large samples of normal individuals.

The present study attempts to attack the problem of sex differences using the normative approach. Klopfer and Kelley in their text, *The Rorschach Technique* (5, p. 220), claim that "there is as yet little reliable or valid information available about sex differences. . . . The literature contains only unsubstantiated hints about sex differences in the records of adults." A review of the literature since the publication of the above statement bears out the fact that this problem has still not been subjected to systematic investigation.

METHOD

Subjects

The population used in this study consisted of 100 males and 100 females, all undergraduate students at Temple University, with an equal representation from each of the undergraduate colleges — Liberal Arts, Teachers, and Business. The groups were equated with respect to total

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[1] This paper is based on a doctoral dissertation submitted to the Temple University Graduate Council in partial fulfillment of the requirements for the degree of Doctor of Philosophy. The author is indebted to Professors Reppert, Smeltzer, and Hackman for their support and encouragement throughout this study.

[2] This paper was presented to the meetings of the Society for Projective Techniques, at the American Psychological Association meetings in New York in 1954.

score on the American Council on Education Psychological Examination and on the basis of chronological age. The average age of the male population was 20.0 (S.D. = 3.57) and the average age of the female was 19.6 (S.D. = 2.44). Insofar as information received from the subject in a pretest interview indicated, no subjects were included who had ever undergone any form of psychiatric treatment.

Procedures

All Rorschachs were administered by the author in accordance with the recommendations presented by Klopfer and Kelley (5), and the test administered included performance proper and inquiry, with exclusion of testing of limits. In every case the complete Rorschach was administered in one testing period. The Guilford-Zimmerman Temperament Survey was always administered to the subjects after the Rorschach had been administered. Each subject indicated his answers on a machine scoring answer sheet with the instructions to "work as quickly as possible and in each case to answer the questions honestly and truthfully."

Analysis of the data consisted of the computation of the means and standard deviations for each of the variables contained in the following larger categories.

a. Rorschach location areas
b. Rorschach determinants
c. Rorschach summary scores (R, T, T/R, sum C)
d. Rorschach ratios (M:sum C; M:FM; F%)
e. Guilford-Zimmerman Temperament Survey.

The computation of these values was carried out for each college class of males and females as well as for each of the criterion groups chosen according to M-F score on the Guilford-Zimmerman. The basic hypothesis to be tested in this study was the null-hypothesis—that is, no differences exist between males and females in their use of the above mentioned variables. The purpose of this analysis then was to attempt to establish at the five and one percent levels of confidence a rejection of the null hypothesis. Because most of the Rorschach variables gave skewed distributions, the procedure used to test for significant differences between classes and between sexes was chi square. With regard to th Guilford-Zimmerman, analysis of variance was used to test for the significance of differences between groups.

RESULTS

1. Practically no sex differences were apparent in the various Rorschach variables. Of the twenty-six variables studied, differences between males and females were found in only two.

a. The females made a greater use of FC than did the males.

b. Males took significantly more time per response (T/R) than did the females.

2. When comparing freshmen, sophomores, juniors, and seniors with one another it was found that junior and senior males and females surpassed freshmen in their use of FC.

3. Analysis of the records with respect to the interaction and interrelationship of Rorschach variables as revealed by the use of three ratios (M:sum C; M:FM; F%) failed to point out any significant differences between males and females.

4. The total population of males and females gave significantly more animal movement responses (FM) than human movement (M) responses ($P < .05$). This was noted specifically for the whole group, with nothing of particular significance noted when this variable was analyzed with respect to the various college classes.

5. On the basis of M-F score on the Guilford-Zimmerman a group of masculine males (N = 50) and feminine females (N = 50) was obtained with the remaining groups designated as non-masculine males (N = 50) and

non-feminine females (N = 50). With this classification the only Rorschach variables to show any significant differences were FC and T/R. It was found that masculine-males gave significantly more FC responses than did non-masculine males (P <.05 >.01); feminine-females giving significantly more FC responses than non-masculine males (P <.01); and non-feminine females presenting significantly more FC responses than did the non-masculine males (P <.05 >.01).

6. On the Guilford - Zimmerman Temperament Survey the females considered themselves more sociable (S), cooperative (P), and friendly (F) than the males. Also, as expected, the males scored themselves significantly more masculine than the females. These results are based completely on a self-analysis inventory.

Discussion of Results

It was felt that the results obtained and conclusions drawn should not be considered as conclusive, but tentative. Even though the findings were suggestive, the limitations of this study indicate that they should be interpreted with caution.

I. There were found to be no statistically significant differences between males and females in 24 of the 26 Rorschach variables studied.

A. Females gave significantly more FC responses, showing a more ready control over emotional situations without loss of responsiveness. This might also indicate a more adequate control of emotional aspects of life than that shown by the males—according to Rorschach interpretation.

B. Males took significantly more time per response to the Rorschach than did the females, indicating either the possibility of having to give responses with greater detail or else a tendency on their part to be more cautious and guarded with their responses. These conclusions are only tentative, and would have to be supported by confirmatory research, which is now lacking.

C. Data from the Guilford-Zimmerman Temperament Survey showed that the females considered themselves as being more socially responsive, friendly, and cooperative than the males.

II. Consideration of the population

Table I. Means, Standard Deviations, and Chi Square Values of Rorschach Location Areas and Summary Scores For Total Population N = 200

Factor	*Sex*	*Mean*	*S.D.*	X^2	*df*	*P*
W	m	7.7	3.3	1.7664	2	>.05
	f	7.1	2.8			
D	m	8.3	7.7	3.0870	3	>.05
	f	10.4	8.4			
d	m	0.8	1.8	0.0240	1	>.05
	f	0.9	2.0			
Dd	m	0.7	1.5	0.1966	1	>.05
	f	1.0	2.7			
S	m	0.2	0.8	0.5234	1	>.05
	f	0.2	0.8			
R	m	17.6	10.7	1.1796	2	>.05
	f	19.5	12.3			
T (sec)	m	524.5	463.2	1.7322	2	>.05
	f	448.9	374.2			
T/R	m	29.3	13.6	8.9128	1	<.01**
	f	22.6	7.9			
P	m	3.6	1.4	4.7110	2	>.05
	f	4.1	1.6			
sum C	m	1.7	1.6	0.6402	2	>.05
	f	1.9	1.6			

** Significant at 1% level.

TABLE II. Means, Standard Deviations, and Chi Square Values of Rorschach Determinants for Total Population N = 200

Factor	*Sex*	*Mean*	*S.D.*	X^2	*d.f.*	*P*
M	m	1.8	1.8	2.3348	3	>.05
	f	2.1	1.7			
FM	m	2.5	2.3	1.7302	3	>.05
	f	2.8	2.5			
m	m	0.2	0.5	0.0000	1	.....
	f	0.3	0.6			
k	m	0.2	0.6	0.1488	1	>.05
	f	0.2	0.4			
K	m	0.1	0.3	0.4788	1	>.05
	f	0.1	0.3			
FK	m	0.1	0.4	0.8170	1	>.05
	f	0.2	0.5			
F	m	9.4	7.6	3.3118	2	>.05
	f	10.2	7.2			
Fc	m	0.6	1.0	1.3806	2	>.05
	f	0.9	1.3			
c	m	0.1	0.4	0.7406	1	>.05
	f	0.1	0.3			
C′	m	0.3	0.6	0.7670	1	>.05
	f	0.3	0.6			
FC	m	1.2	1.3	4.1910	1	<.05 >.01*
	f	1.5	1.6			
CF	m	0.7	1.0	0.5528	2	>.05
	f	0.8	1.0			
C	m	0.2	0.6	0.0000	1	.....
	f	0.2	0.6			

* Significant at 5% level.

TABLE III. Means, Standard Deviations, F Values, and Significant Levels for Guilford-Zimmerman Factors for Total Population N = 200

Factor	*Sex*	*Mean*	*S.D.*	*F*	*P*
G	m	15.7	4.45	1.35	>.05
	f	16.6	5.60		
R	m	15.1	5.40	2.35	>.05
	f	16.3	5.03		
A	m	17.4	4.47	3.47	>.05
	f	16.1	5.84		
S	m	19.8	5.82	7.86	<.01**
	f	22.1	5.42		
E	m	16.2	6.02	0.34	>.05
	f	16.7	6.52		
O	m	16.8	5.59	2.87	>.05
	f	18.1	5.69		
F	m	12.1	5.31	31.00	<.01**
	f	16.4	5.44		
T	m	18.8	4.47	0.02	>.05
	f	18.7	4.39		
P	m	14.9	5.42	4.80	<.05 >.01*
	f	16.8	6.18		
M	m	18.0	4.66	146.0	<.01**
	f	10.5	4.06		

* Significant at 5% level.
** Significant at 1% level.

G – general activity
R – restraint
A – ascendance
S – sociability
E – emotional stability
O – objectivity
F – friendliness
T – thoughtfulness
P – personal relations
M – masculinity

according to masculinity-femininity of emotions and interests as shown by the Guilford-Zimmerman, revealed no differences on the twenty-six Rorschach variables which did not reveal themselves in the total population. Significant differences between the groups were found in only two of the variables studied. The groups considered as part of this aspect of the problem were: masculine males, non-masculine males, feminine females, and non-feminine females.

A. The feminine and non-feminine females as well as the masculine males gave significantly more FC responses than the non-masculine males. There was no difference in this adaptive use of color between any of the female groups and the masculine males. This would indicate that the most inadequate use of FC was that made by the non-masculine males.

B. It was noted that the male groups took significantly more time per response than the female groups, indicating the same tentative conclusions discussed in I-B.

C. Guilford-Zimmerman Temperament Survey results indicated that:

1. Non-feminine females thought of themselves as showing a greater amount of restraint than any of the other groups and considered themselves as showing better personal relations–getting along with others.

2. Both groups of females considered themselves as more sociable than the non-masculine males and considered themselves as significantly more friendly than both groups of males.

3. Masculine-males and non-feminine females considered themselves as the most emotionally stable and objective of the groups.

Summary

This study was concerned with the statistical analysis of personality differences between males and females as revealed by the Rorschach and Guilford-Zimmerman Temperament Survey. This analysis was carried out for the total population of males and females as well as for the groups separated according to an external masculinity-femininity score – The Guilford-Zimmerman M-F scale. The population in this study consisted of 100 males and 100 females, all undergraduate college students. Of the twenty-six Rorschach variables studied, differences between males and females were found in only two:

(A) greater use of FC by the females
(B) longer average time per response (T/R) by males.

When the total sample was classified according to masculinity - femininity score, no significant differences were found in Rorschach variables that were not found in the analysis of the total sample of males and females. On the Guilford-Zimmerman the females considered themselves more sociable, cooperative, and friendly than the males.

References

1. Cronbach, L. J. Statistical methods applied to Rorschach scores: a review. *Psychol. Bull.*, 1949, *46*, 393-429.

2. Guilford, J. P. *Fundamental Statistics in Psychology and Education*. New York: McGraw Hill, 1950.

3. Guilford, J. P. and Zimmerman, W. S. *The Guilford-Zimmerman Temperament Survey: Manual*. Beverly Hills, Calif.: Sheridan Supply Co., 1949.

4. Hertz, M. R. On the standardization of the Rorschach method. *Ror. Res. Exch.*, 1938, *3*, 120-133.

5. Klopfer, B. and Kelley, D. M. *The Rorschach Technique*. New York: World Book, 1946.

6. Klopfer, B., Ainsworth, M. D., Klopfer, W. G., and Holt, R. *Developments in the Rorschach Technique*. New York: World Book, 1954.

7. Neff, W. and Lidz, T. Rorschach patterns of normal subjects of graded intelligence. *J. Proj. Tech.*, 1951, *15*, 45-57.

8. Phillips, L. and Smith, J. G. *Rorschach Interpretation: Advanced Technique*. New York: Grune & Stratton, 1953.

9. Rapaport, D. *Diagnostic Psychological Testing. Vol. II*. Chicago: Yearbook Publishers, 1945.

10. Rorschach, H. *Psychodiagnostics*. New York: Grune & Stratton, 1942.

11. Terman, L. M. and Miles, C. C. *Sex and Personality: studies in masculinity and femininity*. New York: McGraw Hill, 1936.

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Verbal Behavior Analysis: A Systematic Approach to the Problem of Quantifying Psychologic Processes [1]

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PART I. DEVELOPMENT OF THE METHOD

Introduction:

In recent years, there has arisen, for therapeutic and research purposes, a growing awareness of a need to specify and quantify more accurately the psychologic activity of subjects during the interview process. The development of a method for the quantitative and qualitative analysis of verbal behavior has in the past represented a formidable task by virtue of the endless forms and symbolic complexities of language and speech. The importance of this area for scientific investigation becomes clear when it is realized that verbal behavior constitutes the primary phenomenon which clinical psychologists and psychiatrists observe and collect as data. Excepting non-verbal behavior, it is the raw material from which they build working concepts and theories of personality. There is a lack of accurate recording of this raw data by scientific investigators and therapists, and also there is no method for the systematic analysis of the processes of verbal communication.

Review of the literature on the subject of verbal communication reveals a surprisingly widespread interest among investigators of varying disciplines. There are contributions from mathematicians and physicists, philologists, educators, lawyers, psychologists, psychiatrists, sociologists, and anthropologists. The approaches are as varied as the disciplines represented. Most of the findings represent preliminary exploratory speculations or observations, always indicating the need for research. General reviews of the literature are available elsewhere (1, 2, 3, 8, 11, 12, 15, 16, 17, 19, 22, 24, 27).

Purpose:

The specific hypotheses around which this study is oriented stem from our interest and experiences in psychoanalytic practice and theory. 1. We are seeking to develop a psychologically oriented method for the quantitative and qualitative analysis of small samples of speech. 2. We are trying to differentiate those characteristics which do change from the ones which do not change in samples of an individual's verbal behavior produced under different experimental conditions. 3. We are trying to determine whether psychodynamic patterns are reflected in the choice and frequency of use of various classes of words and sounds made during speaking.

If words can be classified according to some psychologic frame of reference and the number of words of each class can be totaled per unit time, it is possible that the elements of verbal communication are quantifiable in terms of word symbols or combinations of word symbols per unit time. Inferences as to intrapsychic processes customarily are drawn from observations of total behavior, psychoanalytic therapy and investigation, and standardized psychological tests. These inferences may be directly correlated with units of classes of

[1] Submitted from the Department of Psychiatry, Cincinnati General Hospital, Cincinnati 29, Ohio. Part of the work presented here was carried out in the Neuropsychiatry Division, Army Medical Service Graduate School, Walter Reed Army Medical Center, Washington, D.C.

words and word patterns per unit time. If the correlations are high, the patterns of language variables themselves may be used to reflect and indicate quantitative aspects of intrapsychic processes. The development of our methodology, then, naturally falls into three phases. The first is the classification of language elements from the perspective of personality theory. The second is the clinical operation of drawing inferences as to psychologic processes behind human behavior observed in the interview situation. The inferences aim to specify the major psychodynamic patterns occurring at the time of observation of the individual. The final phase is that of discovering which verbal units correlate with the psychodynamic inferences, how much, when, and when they do not.

It is a moot question whether the analysis of verbal behavior alone — isolated from changes in pitch, volume, rhythm, and so forth and from non-verbal behavior—offers sufficient clues as to how an individual is reacting or will be inclined to react to stress situations. But the history of scientific progress has shown that one can learn by dealing with part processes as well as whole processes, i.e., in this instance, verbal behavior instead of total behavior. We are acquainted with the idea that the whole is often other than the simple sum of its parts. But we consider the study and analysis of verbal behavior a sufficiently difficult area to integrate for purposes of scientific investigation at this time. The recording and systematic analysis of non-verbal behavior is another study beyond the scope of the present investigation.

Methods and Procedures

Apparatus:

A necessary technical goal in this type of study is to record, reproduce, and transcribe faithfully the verbal productions to be studied. We find high fidelity recording and reproducing equipment[2] to be of value for the purpose of keeping errors in transcribing verbal materials to typewritten form at a minimum.

A silent electronic interval timer[3] is used to introduce a tone signal every five seconds into the voice recordings so that the verbal analysis can be done per unit time.

A remote control box is used to operate the recording apparatus during experimental sessions. The experimental room for recording and interviewing is sound-damped with acoustic Celotex, estimated at 45 to 50 db damping of reflected sound. The room is air-conditioned to maintain a comfortable temperature and humidity.

The processing of the records is accomplished by transferring the recorded material electronically from the magnetic tape to a magnetic wire recorder from which the material is transcribed conveniently by the secretary. The data is typed on a work sheet in a format that expedites analysis in a time dimension: identifying data is typed at the head of the page in a coded system to preserve anonymity; typed lines are triple-spaced to leave room for coding symbols; each time-signal is indicated in the record by a diagonal; ordinary paragraphing is dispensed with in favor of introducing six blank lines to separate each minute of recorded material.

A classification of language elements from the psychologic viewpoint:

A working assumption is that a

[2] We have used an Ampex model 400-A tape recorder; with this, we used an Altec model 21-B omnidirectional microphone with an Altec P-518-A power supply. The audio amplifier was an Altec model A-324-A, used with a 15 inch Altec "duocone" speaker. We also used a magnetic wire recorder, a Peirce "265" cartridge type machine.

[3] The interval timer was designed by and constructed under the supervision of Michael Davis, Chief, Section on Technical Development, Research Branch, National Institute of Mental Health and the National Institute of Neurological Diseases and Blindness, Bethesda, Maryland.

meticulous analysis of the data obtained in short samples of an individual's speech under the standard conditions of this study will provide the information needed to test the hypotheses. Two types of analyses are in use at the present time.

1. *Form analysis:* Speech varies in its manner and form of presentation. These characteristics we are calling "form elements," and we are studying such variables as rate of speech, frequency and duration of pauses, frequency of "fills" (uh's, ah's, er's, etc.) of incomplete words, of sequential repetitions, of non-verbal "expressives" (laughs, coughs, sneezes, throat clearings, sniffles, etc.), and of aposiopeses (instances in which the speaker suddenly breaks off the expression of a thought and introduces another). These form elements of verbal behavior are quantified per unit time and tabulated on a scoring sheet. The recorded data is graphed so as to explore and illustrate possible relationships between other variables.
2. *Content Analysis:* We use the term "content" to refer to the meaning, relationships, objects, concepts, and processes which the verbal elements in speech are intended to symbolize. In this study we are particularly interested in a minute examination of the thesis that the choice and use of individual words or combinations thereof are determined by psychological and biological factors, often out of the speaker's awareness at the time. For this reason, in our "content" analysis the main emphasis is on a classification and scoring of individual words in the context in which they are used and to a minimal extent on their sequential relationship. We have paid some recognition to the fact that an analysis of certain words and word groups in their contextual relationship, as well as the analysis of the themes expressed and recurring in verbal behavior, are also a rich source of relevant information.

The system of classification is based on an attempt to set up rubrics which bear a functional relationship to the elements of psychological processes as we have synthesized them. Briefly, our synthesis of personality theory holds that behavior is determined by often unreportable motives and drives, sometimes in conflict with one another or the external environment. Human behavior may, in part, be characterized by reaction to the frustration of these motives and drives as well as to what can be called "emergency reactions," e.g., fight or flight, anger or fear. The behavior of any one individual is typified by various maneuvers or operations designed to maintain security and well-being.

We have separately classified those words which refer to or stand for environmental objects which have a physical and/or chemical structure. These have been differentiated into references to the "self" and references to "non-self." In the large class non-self, the designations include: other human objects, infra-human animals, flora, and inanimate objects. The tabulation of the frequency of such references per unit time may give a picture of the speaker's currently expressed object orientation and, therefore, may provide evidence for the occurrence of certain psychological mechanisms or the potentiality for certain psychological or behavioral operations, such as, displacement, isolation, and withdrawal.

Verbal symbols whose referents include more than material (physical and/or chemical) structure and which in many instances imply certain types of relationships between concrete objects are classified under the terms "concepts" or "abstractions." This class is subdivided to indicate gross differences in the level of abstraction. For example, at the lowest level of abstraction we differentiate concepts

of measure which express time, spatial relation and quantity. At a higher level of abstraction, we separately classify those concepts symbolizing action of, or between, concrete objects and/or other concepts. At a still higher level we designate two types of concepts: one group symbolizing a state and the other a quality of concrete objects and/or concepts. We think that the number of concepts used and the type chosen by an individual may provide quantitative evidence of such psychologic processes as intellectualization, symbolization, intellectual ability, reality testing at the thought level, and degree of departure from physical reality.

Words expressing motivation, action, perception, and thought have been individually scored in a group which represents types of processes occurring between objects and/or concepts. In the grammatical sense these words are generally "verbs." It is thought that this type of classification might provide evidence to indicate the preferred habitual modes of interaction of the individual as well as those types of interaction processes which develop in an individual under stress, either internal or external. We speculate that quantitative variations in these categories may be an expression of the balance of impulsiveness and control in an individual. We reason that the point at which inhibition of behavioral activity occurs may lie on the input side of a psychological process (i.e., perception) or during its inner recognition, organization, and impulse arousal (thought, feeling, and motivational pressure) or finally, on the output side of activity (words symbolizing action processes). We think that a careful study of these particular variables and their characteristics might be especially fruitful.

Other rubrics under which individual words are classified are as follows: references to measure, to qualification, to gender, to part-whole designation, to negation, to conjunction, and to interjection. The grouping "references to measure" includes any words which indicate some relationship in time, in space, or in quantity, regardless of the part of speech or context in which that word is used. Some of the psychological implications and specific research possibilities of these data are worthy of mention. The number and kind of verbal symbols which express a relationship of measure (size, quantity, time, space) may indicate the degree of the speaker's exploratory alertness and attention to orientation. Such orienting activities occur in relation to sequences of intrapersonal and interpersonal events. Therefore, they may be of significance in elucidating certain qualitative and possibly quantitative aspects of psychodynamic processes. Variations in the frequency of qualifications of objects and/or concepts (predominantly adjectives), or processes between such (verbs), may be of value in understanding discriminative and integrative capacities of an individual, as well as the faulty generalizations and tendencies to distort various aspects of objects and their relationships.

In the historical development of techniques of verbal behavior analysis attention was directed early to ratios between the frequency of the use of verbs and adjectives and the frequency of use of other grammatical parts of speech (7, 10). There have been more recent clinical studies of these variables in both children (6, 9) and adults (4, 5, 13, 23, 25, 26).

Conduct of Experimental Sessions:

Each experimental session is divided into two parts, each of five minutes' duration. Spontaneous verbal activity is visually induced in the first part. Standard instructions are used which are repeated for every session. Four pictures, selected from the Thematic Apperception Test, are used for the procedure of visual induction. The cards, in order of presentation are 7 GF, 13 MF, 2 BM, and 3 BM. The

same pictures are used for each experimental session. The instructions read as follows: "This is a study of story telling. I have here four pictures that I am going to show you, and for each picture I want you to make up a story. Tell what has happened before, and what is happening now. Say what the people are feeling and thinking, and how it will come out. You can make up any kind of story you please. You may talk about one picture or any number of pictures you please. Start with the picture on top and take them in order. Once you have started, I shall be here listening to you, but I would prefer not to reply to any questions you may direct to me until the five minutes are up. I would prefer that you continue your story telling until I give you a signal to stop. You may go back over the cards if you finish your stories before I give you the signal to stop. Do you understand? Well, then, here are the four pictures and you may start." [4]

The second half of the experimental session is designed to elicit spontaneous verbal activity by means of verbal, as opposed to visual means. The standard instructions which are given for this part of each experimental session read: "This is a study of speaking and conversational habits. Upon a signal from me, I would like you to start telling me as freely as you can about any interesting or dramatic life experiences you have had. Once you have started, I shall be here listening to you, but I would prefer not to reply to any questions you may feel like asking me until the five minutes are up. Do you have any questions you would like to ask me now before we start? . . . Well, then, you may start."

In the conduct of experimental sessions, no one else is in the room except the investigator and the speaker. The microphone is in full view, upright on a pedestal base on the desk. The subject is informed of the recording and its transcription, as well as of the confidential handling of his productions.

General Observations on the Method:

We have collected and analyzed over 250 five minute verbal samples up to this time. The consistency of classification of the form and content of several verbal samples by the two principal investigators and a secretary (Civil Service employee, GS - 3) has been found to be over 99%. The classification system can be readily mastered by non-technical help.

General Observations:

From our experience thus far, we find that the interview situations which we use to elicit speech can be regarded as standard stress situations with certain constant and variable characteristics. The constant characteristics include (for each interview) the same instructions, pictures, room, recording apparatus, and usually, time of day for making the recording. We are able to control such variables as who is the interviewer, placement of microphone, whether the subject is sitting or on the couch. We cannot control the emotional state of the interviewer at the time of each successive recording. This, we assume, is of a significance which will bear considerable study because it appears possible that there is communication of the interviewer's attitude of the moment to the speaker (subject) sometimes out of the awareness of both.

The stress aspects of the interview situation can be described in terms of the adaptive task presented to the speaker, concerning which we have made a number of observations, as follows: The speaker must understand the instructions, remember them, and apply them while talking, if he is to perform "well" and please the inter-

[4] These instructions are adapted from Henry A. Murray (18). We are indebted to the Harvard University Press and Dr. Henry A. Murray for permission to use the Thematic Apperception Test materials in this study.

viewer, which many speakers are apparently motivated to do. Then, he has several simultaneous problems to solve: He must cope with his own aroused anxiety regarding the situation in which he finds himself, produce without support, and conform to the "rules of the game." These are: (a) to be a subject, i.e., he must acquiesce to the instructions the interviewer gives him; (b) he must make up stories about the pictures and (c) tell an incident from his past, thus revealing himself. He must cope with any secondary fear or anger engendered by the stress situation. We assume, in addition, that the speaker attempts to satisfy frustrated needs and wishes which are active at the time of the interview. All of this he does in the context of establishing a relationship with the interviewer, that is, in the social situation.

This social situation of the standard experimental interview is, moreover, a very special one. Once the speaker has started, the "conversation" is completely one-sided. The speaker is in a new situation and we observe that his first operations on the one hand reveal his exploratory maneuvers, while on the other hand they show his expectations of the interviewer. Since he does not interact physically with the interviewer, the speaker is left with the opportunity to explore in fantasy the establishment of a sequence of relationships with the investigator, depending upon the emotional significance with which he invests the investigator at the moment.

The experimental situation in which the interviewee is asked to make up stories by looking at four standard Thematic Apperception test cards simulates, in our opinion, the circumstances in which projective psychologic tests are administered. We think this experimental set-up may be expected to evoke psychologic reactions and patterns of verbal activity peculiar to this situation. Comparison of such speech patterns with the patterns obtained under other experimental conditions permit determination of what unique effects, if any, the technique of personality evaluation itself has on the behavior observed and psychologic reactions inferred.

The experimental condition in which the interviewee is asked to talk about any interesting or dramatic personal life experiences simulates, in our opinion, the psychoanalytic interview. In both this experimental situation and the psychoanalytic interview there is a group of two individuals, one of whom is encouraged to speak uninhibitedly about the self while the other listens and responds verbally relatively infrequently. There are obvious differences between this experimental condition and the psychoanalytic interview, e.g., the therapeutic goal and the duration of the interaction. We think, however, there may be sufficient similarity in the patterns of language evoked in the two situations to enable us to apply tentatively the findings from the experimental situation to the psychoanalytic interview. (We have recorded psychoanalytic interviews with a patient who has been a subject in our experimental sessions and we are in the process of comparing the verbal patterns produced in the two situations.)

Finally, we have observed that when a person responds to the experimental situation in which he is asked to tell any interesting or dramatic personal life experience, his verbal reactions are a partial expression of his total psychologic status at the moment. The verbal reactions are determined by a complex of factors. These factors include not only how the situation and interviewer are perceived by the interviewee, but also by the past life experiences and reaction patterns that are mobilized in the process of adapting to the situation.

PART II. PRELIMINARY FINDINGS: THE RELATIONSHIPS BETWEEN PSYCHOLOGIC STATES AND CONFLICTS AND THE CONTENT AND FORM OF SPEECH

The purpose of this preliminary study was to determine whether any significant relationship exists between recurring psychodynamic conflicts and patterns of certain categories of words used by one individual. Another purpose of this study was to determine whether there are any correlates in the form aspects of spoken language and recurring psychodynamic conflicts or psychologic states. The form aspects of speech that were measured include variations in the rate of speech, the frequency of "uhs", "ahs", "ers", the frequency of consecutively repeated words and phrases, the frequency of nonverbal sounds (e.g., coughing, clearing of the throat, sniffing, laughing) and so forth.

Procedure:

The subject of these studies was a 40 year old married woman who was in psychoanalytic therapy with one of the investigators (L.A.G.). She had a neurotic character disorder with masochistic features and symptoms of depression. Also, for 15 years she had had occasional recurring symptoms and signs of spontaneous hypoglycemia verified by blood sugar tests. There had been no demonstrable pathological bodily findings on repeated diagnostic medical studies. In part payment for her treatment she consented to serve as a subject for these experimental investigations. This arrangement required her giving two five minute samples of her speech under experimental conditions about once a week immediately following a psychoanalytic treatment session. Verbal activity was elicited, recorded, analyzed and coded according to methods described in Part I.

The present report deals with findings obtained in the detailed study of 10 successive pairs of 5 minute verbal samples produced at intervals of either one or two weeks by the subject in the presence of one of the authors (L.A.G.) and with a microphone and recording apparatus in full view.

The psychoanalytic sessions with this patient permitted the formulation of the current psychologic conflict and mechanisms of defense occurring each session. We paid particular attention to the psychodynamic processes during the psychoanalytic session just preceding each experimental session. We thought we found evidence that various psychologic conflicts, sometimes unreportable by the patient but inferable by the psychoanalyst, were associated with certain patterns in the subject matter of the patient's verbal productions during the experimental sessions and also the manner and form of speech and choice of language.

As an example, here is a summary statement, in chronological order, of the gist of the patient's verbalizations from the psychoanalytic session, followed by the verbatim tape recorded material from the first experimental sessions.

FIRST EXPERIMENTAL UNIT

A. *Psychoanalytic Session (9-9-52)*

She spoke about longings to be motherly towards her 17 year old delinquent son and reported mild feelings of remorse about attitudes of rejection that she had expressed towards him when he was younger. She said how much she was enjoying her affectionate feelings for and nursing and supportive activities with various animals, like her dogs, cats, and her horse. She did not feel quite so hateful and depreciative towards her mother and her husband—who bere both generally unloving and egotistical in her opinion. She felt mildly sympathetic for her mother, especially since her mother had been sick. She spoke of experiencing a transient realization that her husband was capable of

warmth and affection when problems at his place of work were not too preoccupying for him.

She expressed gratitude because she felt she was getting help from the therapist. She wished she could have the pleasure of being taken care of like a child, of being dressed by a maid servant, and of otherwise being indulged. She doubted whether she was deserving and worthy enough to entertain such ideas and, furthermore, she recalled a past experience in which she felt painfully disappointed in an unhappy love affair. At the end of the session she complimented the analyst on his appearance and dress.

B. Visually Induced Verbal Sample (9-9-52)[5]

"It's ah looks like a reproduction of a painting or charcoal from French or French influenced/ American group. And there's a good deal of tenderness in it./ The little girl is rather desolately sad and is the ah, I feel, very self-conscious at this point. It's not a live baby. It's a doll/ in her lap, that probably has been hurt or injured in some way, and she's quite disconsolate about it. And her mother has, in her/
whole attitude, has a, I assume it's her mother, has a very infinitely maternal/ response, with imagination in the doll's need and also in support of her daughter's or the young girl's/sadness. It's an awfully nice composition. But if it is the mother, at least the adult has a great deal of solicitude/ and interest. I would say that something's happened to the doll, and the little girl has come to her mother, because the mother is reading, or possibly her nurse, and/
stopped, paused in her reading to try to give comfort in ah/ the girl's hurt. It's probably an imaginative (sniff)/ hurt, if it is a doll. And I'm sure a baby wouldn't be held like that. (sniff) It's pretty small for a baby anyway./ And ah but injury to a/
doll which is an inanimate object actually is a very *real* injury to a very *real* baby, to/ a young girl. Like a lot of our hurts are imaginative. But they're very real/ in ah childhood where you're experimenting with adult situations, playing at being mother. A sort of a ah/ trial and error period in the exploratory period for later actual experience. There is a great deal of pathos and a great deal of tenderness/
and sweetness in it. I'd like to know who the artist is./ Oh, this must be a charcoal. And there's something evidently/ quite tragic about the situation. Either death has just occurred,/ and the man is overcome with shock, grief. I would imagine that that would be/ . . . "

C. Verbally Induced Verbal Sample (9-9-52)[5]

"The first thing I thought of when you mentioned ah a personal experience, possibly dramatic or interesting, was the/ only time that I've been in a plane that couldn't land, temporarily. We came into, ah on American Airlines, into Memphis, one morning about ah four years ago,/ in a DC-4. And ah because I'm interested in flying, and was doing some flying at that time/ I always checked the pilot on the precision of his land, landing pattern. We came down. The orange lights at the end of the runway were very clearly visible,/
and we slipped over them. We were quite close to the ground, and I was waiting for the contact to be made, and we kept going down the runway, and finally lifted back off, and went up, with/ out coming in, actually touching. And I felt, possibly there had been some mistake between the tower and the pilot. There/ must be a small plane that was taking off in advance of our landing and possibly had not gotten airborne. And yet we had stayed close enough to the runway, picking up flying speed to get airborne, so that/ we certainly must have overtaken it. So, it was a mystery and we came around to go through the same procedure again. And again skimmed the runway without touching./
I was sitting forward. The stewardess had gone to the pilot's compartment and came out—practically everybody in the plane was asleep—and saw my eyebrows raised/ in question, I guess, and announced that the landing gear was not working, (sniff) the wheels would not come down. There was a chap sitting next to me, sat up with a jerk/ and became very upset about it. And word got around the plane—no bones, no punches were being pulled about what it was./ A short time before that a plane had come in, a Lockheed, and the same thing occurred. The landing wheels wouldn't come down. The plane had taken to the air and stayed up/

[5] There are exactly five minutes of recorded speech in each of these experimental samples. Each paragraph represents the elapse of one minute and each diagonal mark the passage of fifteen seconds.

until the fuel was dissipated and then made a pancake, belly-landing on the turf, with the fire equipment standing by. So I assumed that would be our procedure. But instead we went up/ and swept the field at about 500 feet elevation and then the hostess announced that they were getting a mechanic to the top of the hangar and everybody was a little bit amused at what a mechanic on the hangar could do. But they rigged up searchlights/ and we swept the hangar between two searchlights, very closely. And ah apparently someone was up there to check the mechanisms from the outside. Apparently the ah/ indicators in the plane of the landing wheels not working had been at fault and the fact the wheels were not down had been picked up when the heavy lights at the end of the runway hit the plane, and the tower/
had quickly told the pilot that the wheels were not down. So we went up into the air and went into a series of very abrupt stalls. We got up several thousand feet to shake the things loose. And we finally shook them loose and came down,/ about an hour later. And ah we disembarked. There was a mad rush for the little coffee bar. And ah/ I stopped to send a post card to J. [her son] while everybody else milled into the coffee bar. I felt we'd be there for sometime, and there was no rush. And asked for some stamps, and I had no/ saliva in my mouth. I could scarcely talk (laugh). I had just, was completely dehydrated, I think, from the anxiety about the situation. We got aboard/ . . . "

A perusal of the material of this experimental unit will suggest to some that there are certain common elements in the thematic content and underlying psychologic conflicts of the psychoanalytic session and the immediately following experimental session. We ourselves observed that sometimes in very obvious ways and often in more subtle ways, there were reflections in the experimentally elicited verbal behavior of the same psychodynamic conflicts expressed in the psychoanalytic sessions. The visually elicited verbal behavior of the patient tended to reflect some aspects of these psychologic conflicts and the verbally elicited verbal behavior tended to reflect other aspects. For example, we noted that visually induced material would at one time mirror predominantly unacceptable impulses; whereas the verbally induced material would mirror the inhibitions or defenses against the expression of such motivations. At other times, the reverse situation occurred. Or there were elements of both unacceptable impulses and inhibition in either type of verbal sample. No standard pattern appeared to prevail.

These preliminary observations encouraged us to proceed with a further analysis of our data. An attempt was made to determine whether there were any specific elements of speech from the experimental session which were consistently related with a specific psychologic state manifested during the proceding psychoanalytic session. By using only the verbally induced samples, several leads were obtained which were then subjected to more thorough tests.

We noted, when there was evidence from the preceding psychoanalytic session, that the patient had a conflict between an "incorporative" urge and internal restrictions against its external expression (a prominent problem in this patient) that there were some signs of this conflict in the experimental verbal samples. One sign was an increased number of references to situations in which some person or animal was either exposed to an increased possibility or actually experienced physical injury. Another sign was an increased number of references to situations in which some person or animal was exposed to a possible or actual interference or delay in taking something by mouth. We assumed that the occurrence of these references indicated that the patient had an urge to take something into her body (principally via the mouth) which conflicted with other habitual attitudes and tendencies. The resultant expressions of these intrapersonal conflicts were signs of inhibition of the urge, signs of possible consequences of carrying out the conflicted urge,

and signs of compromise solutions. We compared our initial impressions of the degree of the patient's psychological conflict around inhibited impulses to take something into her body with graphs of the numerical variations of all our verbal "content" variables in each verbally induced verbal sample. We found that when we estimated that the "incorporative" urge was stronger at any one time, or that the inner restrictions against this urge were weaker, then there was an increase in (1) the number (per unit time) of verbs denoting neuromuscular action (A), (2) the number (per unit time) of words referring to concrete, animate and inanimate objects (O) for example, words referring to the self, others, animals, flowers, things. Simultaneously, (3) there was a decrease in the number (per unit time) of words referring to "concepts" (C) or "abstractions", by which we mean words symbolizing more than a material object and including processes going on within or between concrete objects or abstractions, for example, words like democracy, battle, configuration, time, happiness and so forth. These initial impressions suggested that the ratio of verbs of neuro-muscular action (A) plus words designating concrete objects (O) to words designating "concepts" or "abstractions" (C) might be an index of the "incorporative" urge in this patient, i.e., the ratio $\frac{A + O}{C}$. (We doubt whether this particular mathematical relationship of the variables is the most accurate one possible; we consider it a rough approximation, accurate enough at this stage of our investigation.)

It was also noted that when the patient was experiencing a diffuse drive to action (whether constructive, destructive, primary or in reaction to frustration) and internal restrictions against the expression of this drive were temporarily and relatively decreased, then there were signs of this psychologic conflict in the experimental verbal samples. The main sign was an increased number of verbal references to situations in which some person or animal was exposed to an increased possibility of or actually experienced some p h y s i c a l injury. Whereas, a combination of signs of impending or actual physical injury and inhibition of an oral wish were associated with a conflict over "incorporative" urges, the sign of impending or actual physical injury alone appeared to be associated with a conflict about the diffuse drive to action. When we investigated, by graphs, what variations in our verbal content variables tended to parallel variations in the degree of the patient's drive to action and associated internal restrictions, we found another verbal index of apparent related significance. This was the ratio:

$$\frac{\text{verbs denoting neuromuscular action (A)}}{\text{qualifying words, specifically adjectives}}$$

This index was based on the observations that when we estimated that the diffuse drive to action was increased there was an increased number per unit time of verbs denoting neuromuscular action (A) and a decrease in the number per unit of time of qualifying words, specifically adjectives (except articles).

Preliminary surveys of the patient's verbally induced samples revealed the relationships described above, while surveys of the patient's visually induced samples revealed no such clear-cut relationship. For this reason the further study of these particular relationships was confined to the verbally induced samples.

To test these initial impressions more rigorously four judges, unacquainted with the purpose of the research, were asked to rank, on a scale of 1 to 10, ten of the patient's verbally induced verbal samples. The rank of 1 was assigned to the verbal sample in which the largest number and most vivid situations were described where some person or animal was exposed to

TABLE I—Average rankings by four judges of the patient's ten verbal samples on the basis of the number and quality of references to impending or actual experiences of physical injury and/or inhibition of an oral wish. The sample with the greatest magnitude of the specified characteristics was ranked number 1. Judge I was a woman Civil Service employee; category, clerk-typist. Judges II and III were male psychiatrists. Judge IV was a female psychiatrist.

Verbal Sample Number	Date	Ratings by Judges I V.C.	II R.H.	III J.D.	IV N.G.	Average
I	9/19/52	3	3	2	2	2.5
II	9/26/52	6	5	3	3	4.25
III	10/2/52	2	2	6	5	3.75
IV	10/10/52	10	10	9	10	9.75
V	10/24/52	5	9	4	4	5.5
VI	10/31/52	7	7	7	7	7.0
VII	11/7/52	1	1	1	1	1.0
VIII	11/14/52	9	6	10	6	7.75
IX	1/16/53	8	8	8	9	8.25
X	1/23/53	4	4	5	8	5.25

an increased possibility of or actually experienced physical injury and/or an interference in taking something by mouth.

RESULTS

Relationships between Psychodynamic Conflicts and Patterns of Certain Categories of Words.

The ratings by the four judges are given in Table I, which also includes the average rating of each sample by the four judges in terms of references per sample to impending or actual "physical injury" and/or inhibition of an oral wish involving a person or animal. The degree of agreement between the ratings of the verbal samples by the four judges can be seen by examination of Table I to have been fairly close.

Next, one of the investigators (L. A. G.) made a tally of the items in each of the ten verbal samples following the criteria given to the judges. The results of this tally method of ranking the verbal samples in terms of references to impending or actual "physical injury" or inhibition of an oral wish involving a person or animal is also shown in Table I. It was found (Table II) that there was a significant rank-difference correlation (rho = .96), between the average ratings by the four judges and the ratings through tabulation of such references in each verbal sample by one person (L.A.G.).

We found a highly significant correlation, (rho = .96), between rankings of the ten verbal samples obtained through calculating the numerical value of the ratio, verbs of neuromuscular action plus words designating concrete objects to words designating "concepts" or "abstractions", $\frac{(A + O)}{C}$ and the average rating by four judges of reference in the verbal samples to impending or actual experience of "physical injury" and/or inhibition of an oral wish. (See Table III)

The correlation was also significant (rho = .93) between rankings obtained through the tally of such references in each verbal sample by one of us and rankings obtained from the index $\frac{A + O}{C}$. (See Table IV.)

The index,

$$\frac{\text{verbs of neuromuscular action}}{\text{adjectives (excluding articles)}} \cdot \frac{(A)}{(adj.)}$$

was found to be highly correlated (rho = .94), in ten instances in this particular patient, with the number of verbal references to impending or

actual experiences of "physical injury" to a person or animal. (See Table V.)

It is apparent that the two indices, which seem to represent in the one instance a drive to take something into the body via the mouth and on the other instance a diffuse drive to activity, are related in that they both

TABLE II—Comparison of two methods of rating of the patient's verbal samples, numbers I through X for references to impending or actual experiences of physical injury and/or inhibition of an oral wish. The correlation by the rank-difference method is rho = 0.96.

METHOD I: Averages of ratings by four judges

METHOD III: Rating through tabulation of such references in each verbal sample (L.A.G.)

Verbal Sample Number	Method I	Method III
I	2.5	2.0
II	4.25	3.0
III	3.75	4.0
IV	9.75	9.5
V	5.5	7.0
VI	7.0	7.0
VII	1.0	1.0
VIII	7.75	7.0
IX	8.25	9.5
X	5.25	5.0

TABLE III—Comparison of two methods of rating the patient's verbal samples, Number *I* through *X*, for references to impending or actual experiences of physical injury and/or inhibition of an oral wish. The correlation, by the rank-difference method, is: rho = .96.

METHOD I: Averages of ratings by four judges

METHOD II: Rating by patterns of quantitative structural language variables, i.e., $\frac{A+O.}{C}$

Verbal Sample Number	Method I Average Ratings by 4 judges rank	Method II Ratings by $\frac{A+O}{C} = X$ X	rank
I	2.5	2.92	2.0
II	4.25	1.84	5.0
III	3.75	2.29	4.0
IV	9.75	0.58	10.0
V	5.5	1.68	6.0
VI	7.0	1.54	7.0
VII	1.0	3.25	1.0
VIII	7.75	1.27	8.0
IX	8.25	1.21	9.0
X	5.25	2.40	3.0

TABLE IV—Comparison of two methods of rating of the patient's verbal samples, Numbers *I* through *X*, for references to impending or actual experiences of physical injury and/or inhibition of an oral wish. The correlation, by the rank-difference method, is rho = .93.

METHOD III: Rating through tally of such references in each verbal sample (L.A.G.)

METHOD II: Rating by patterns of quantitative structural language variables, i.e., $\frac{A+O.}{C}$

Verbal Sample Number	Method III	Method II $\frac{A+O}{C}$ rank
I	2	2.0
II	3	5
III	4	4
IV	9.5	10
V	7	6
VI	7	7
VII	1	1
VIII	7	8
IX	9.5	9
X	5	3

TABLE V—Comparison of two methods of rating the patient's verbal samples, Numbers *I* through *X* for references to impending or actual experiences of physical injury. The correlation, by the rank-difference method, is: rho = .94.

METHOD III: Rating through tabulation of such references in each verbal sample (by L.A.G.)

METHOD II: Rating by patterns of quantitative structural language variables, i.e., $\frac{A}{adj.}$

Verbal Sample Number	Method III Ref.	rank	Method II A/adj.	rank
I	7	1	1.19	1
II	5	2	.86	2
III	2	4.5	.80	4
IV	0	9	.45	9
V	1	6.5	.65	5.5
VI	0	9	.37	10
VII	4	3	.82	3
VIII	1	6.5	.65	5.5
IX	0	9	.55	8
X	2	4.5	.60	7

reflect a drive to action. The latter appears to be a measure of a generalized state of readiness to activity and the former is relevant to a specific type of activity; namely, incorporating, ingesting. One would expect that the two indices themselves, since they are derived from a common variable (A) and are measures of drives to action, would show some tendency to change in the same direction in the ten verbal samples obtained from our subject. That they are, indeed, associated indices and therefore the drives they reflect are associated, is indicated by the rank difference method of correlation. (rho = .71).

Relationships between Psychodynamic Conflicts and Certain Variables of Speech Habits not Ordinarily Considered to Constitute "Content".

We found that there was an association between an increased urge to take some object into the body (as judged from our index $\frac{A+O}{C}$) and some of of the form aspects of speech we measured. For instance, the total number of words spoken per five minutes tended to increase significantly when the index $\frac{A+O}{C}$ increased and decreased, and similarly a decrease in the one was associated with a decrease in the other (tau = .55, p = .026).[6]

The frequency of non-verbal sounds (such as sniffles, throat-clearings, coughs, laughs and so forth) tended to vary in the same direction as our index, $\frac{A+O}{C}$ (tau = .28, p = .26). Similarly, an increased rate of repetitions of words and phrases was associated with a decrease in the numerical value of the index of diffuse drive to action (tau = —.39, p = .118). The rate of "uhs, ahs, ers" and the like also tended to vary inversely with this index (tau = —.38, p = .118).

[6] From Kendall's tau, a method of rank correlation (14).

PART III. PRELIMINARY FINDINGS: THE ASSOCIATION OF CERTAIN LANGUAGE PATTERNS WITH SPECIFIC THEMATIC CONTENT.

A previous study of ten 5-minute samples of speech of one individual provided evidence that in this person the frequency of use of certain patterns of words was associated with certain definite thematic content.

The next study was developed in order to determine to what extent the association between language patterns and thematic content found in this one individual was generalizable to other individuals.

Procedure:

Five minute samples of speech, of twenty-two subjects, 16 men and 6 women, were elicited by asking each subject to talk about any interesting or dramatic life experience. Details of this standardized method of inducing speech, as well as the procedures of recording, transcribing, and coding the material are described in Part I.

The number of references in each verbal sample to situations, involving human or animal life, in which there was an increased possibility of an actual physical (tissue) injury, "oral inhibition"[7], and "oral satisfaction"[8] were tabulated. The number of such references were then totaled separately for each subject according to the categories:

1. Number of references to threatened or actual physical injury.
2. Number of references to physical injury plus "oral inhibition".
3. Number of references to physical injury plus "oral inhibition" plus "oral satisfaction".

These totals were then ranked in each category in order of the largest magnitude to the smallest.

[7] A reference to any possible or actual delay or interference in immediate oral gratification.

[8] A reference to any oral intaking activity without explicit delay or interference in completing this activity.

A count was made of various classes of words in each verbal sample. These word classes included: verbs denoting neuro-muscular action (A); words referring to concrete objects, e.g. people, animals, vegetative life, inanimate objects (O); words referring to abstractions and concepts (C); words, excluding articles, that qualify concrete objects or abstractions, being used grammatically as adjectives (adj.). The numerical values of the word ratios (language patterns) A + O/C and A/adj. were calculated for each verbal sample and these numbers were given ranks in order of the largest to the smallest number.

The rankings of the word ratios were compared statistically to the rankings of the categories of thematic content for each of the 22 verbal samples, using the rank difference method of correlation. The results of these comparisons are shown in Table VI, which gives the correlations between the rankings obtained from the two groups of variables, i.e., language (word) pattern and content of verbal communication.

Results:

Table VI indicates that there is a substantial correlation between the ratio A + O/C and the items in the thematic content, the highest positive association (.66) occurring between A + O/C and total references to physical injury, "oral inhibition", and "oral satisfaction". No significant association occurs between the word ratio A/adj. and thematic content.

Discussion:

In a previous experiment (Part II), we found that one subject, a 40 year-old woman with idiopathic spontaneous hypoglycemia and a neurotic personality disorder with masochistic features, showed a high correlation ($r = .93$) in samples of her speech recorded on different days between the rank values of the ratio (word pattern) A + O/C and references to situations involving physical injury and "oral inhibition". The correlation of rank values of the word ratio A + O/C with thematic content was not so high ($r = .85$) when references to "oral satisfaction" were included in the calculation. (See Table VII). Also, the word ratio A/adj. was associated in a highly positive degree with certain thematic content pattern.

We believe that the correlations within the group of 22 subjects between the word pattern A + O/C and the specified thematic content patterns tends to support the hypothesis, derived from the more detailed studies of the 40 year-old woman, that the word pattern A + O/C is associated with the frequency of verbal expression of certain specific ideas. But the fact that there is a notable lack of association between the word pattern A/adj. and the frequency of verbal

TABLE VI—Correlations (rank-difference method) between Certain Word Patterns and Thematic Content in Five-Minute Verbal Samples of 22 Individuals.

Thematic Content	Word Patterns	
Total number of references to possible or actual events involving human or animal life	Number of verbs of neuro-muscular action (A) plus words referring to concrete objects (O) divided by words referring to abstractions (C) − (A+O/C)	Number of verbs of neuro-muscular action (A) divided by adjectives, excluding articles. (adj.) − A/adj.
Physical injury	.54	−.04
Physical injury plus "oral inhibition"	.55	−.03
Physical injury plus "oral inhibition" plus "oral satisfaction"	.66	−.15

TABLE VII—Correlations (rank-difference method) between certain language patterns and thematic content in ten successive verbal samples of one subject.

Thematic Content	Word Patterns	
Total number of references to possible or actual events involving human or animal life	Number of verbs of neuromuscular action (A) plus words referring to concrete objects (O) divided by words referring to abstractions (C) $-(A+O/C)$	Number of verbs of neuromuscular action (A) divided by adjectives, excluding articles. (adj.)—A/adj.
Physical injury	.85	.94
Physical injury plus "oral inhibition"	.93	.84
Physical injury plus "oral inhibition" plus "oral satisfaction"	.85	.78

expression of such ideas in the group of 22 individuals as compared to the findings with the 40 year-old woman, as well as the fact that there are differences in the correlation trend of the word pattern $A + O/C$ with the specified thematic content, highlights the effects of individual personality differences on language patterns.

At this time we would like to speculate about the effects of some individual personality differences on speech patterns. The 40 year-old woman who showed the correlations between language patterns and verbalized content items illustrated in Table VII is an interesting example. During psychoanalytic study of this patient it was noted that when her dependent needs were very intense and that gratification of these needs was blocked by either external events and/or her own internal restrictions (manifested in the emotional reactions of shame and guilt) symptoms developed that were typical of a hypoglycemic episode. Along with her masochistic concept of herself as a woman, which was manifested in behavior that was either self-punishing and self-depriving or provocative of punishment and deprivation from others, the hypoglycemic reactions reinforced the patient's attitude that she was destined to be unsatisfied in her needs for love, support, and food and was likely to suffer physical injury in her wishes to be normally assertive in her interpersonal relationships. This neurotic struggle, with the patient's unique component of hypoglycemic episodes, may explain why this patient shows the highest correlation between (1) ideas of physical injury plus ideas of "oral inhibition", and (2) the word pattern $A + O/C$. The word pattern $A + O/C$ may be regarded as a formula, showing how much an individual is talking about interactions (verbs of action A) between concrete objects (O), including people, relative to talk about various kinds of abstractions (C). When this patient uses more word symbols denoting interactions between concrete objects as compared to abstractions, she is inclined to link these word symbols together more often in a way that conveys ideas about "oral inhibition" and physical injury because she feels so punished, in want of love, and starved. Whereas, a group of 22 individuals, just as often or more often, link these word symbols together to convey ideas of "oral satisfaction" and not so often to include ideas of physical injury and "oral inhibition".

We think that our findings indicate that the word pattern $\frac{A + O}{C}$ is associated with the specified thematic contents. The word pattern A/adj. shows no association with the specific thematic contents among the group of 22

persons (although it does with the one individual intensively studied for reasons not fully determined). We find from the group study that the word pattern $\frac{A + O}{C}$ correlates most highly ($r = .66$) with references to potential or actual events involving human or animal life and dealing with physical injury, "oral inhibition," and "oral satisfaction". There is no significant difference ($P = .1$) between this correlation ($r = .66$) and the correlation ($r = .85$) found between these variables as obtained from the individual who was more intensively studied. It is highly unlikely ($P = .01$) that the correlation coefficient ($r = .66$) is a chance fluctuation from no relationship. Therefore, we conclude that, within the limits of our study, the language pattern $A + O/C$ tends to be associated with the specified thematic contents.

Part IV. Preliminary Findings: The Differences in Verbal Behavior Induced by a Situation Simulating Projective Testing (Using Thematic Apperception Test Pictures) as Compared to a Situation Simulating Psychiatric Interviewing.

Purpose:

The general aim of this study was to determine what, if any, different reactions in the verbal behavior of individuals occur under the two standard experimental conditions described in Part I and designed to bring out characteristic psychologic reactions as reflected in speech.

The practical and theoretical significance of this study was that it could help answer the question whether the psychiatric interview and the projective test situation provoke and measure the same things.

Procedures:

Using the two standard experimental conditions one "visually induced" and one "verbally induced" five-minute verbal sample was obtained from each of eleven psychiatric in-patients at Walter Reed Army Hospital (WRAH group). Another pair of five-minute verbal samples, one visually and one verbally induced, was obtained from each of eleven non-hospitalized employees at the National Institutes of Health (NIH group). Each of these 22 subjects, in one session, responded verbally first to the visual method of induction and then to the verbal method of induction.

A series of many such pairs of five-minute verbal samples was obtained from two individuals, one man (subject #1) and one woman (subject #2) during experimental sessions spaced one or two weeks apart. The order of presentation of the two experimental situations was the same as with the group of 22 subjects, i.e., "visual induction" first, followed by "verbal induction". However, in order to help rule out the possibility that the order of presentation of these two experimental situations in itself might be responsible for any differences occurring in the language patterns of the visually induced and verbally induced verbal samples, an additional series of pairs of verbal samples was obtained from the male subject. The order of presentation of the stimulus-situations was reversed, i.e., verbal induction followed by visual induction. And, finally, a short series of an alternating order of presentation of the stimulus-situations was carried out, that is, verbal-visual, visual-verbal, verbal-visual, and so forth.

The verbal samples analyzed in this study were all produced in the presence of the same investigator (LAG) with the exception of the series of verbal samples produced by subject #2 which were all elicited in the presence of the other investigator (G.H.)

Results:

Highly significant differences were found in certain language variables

TABLE VIII—The Mean Percentages of Certain Categories of Words Used by 22 Individuals in Two Experimental Situations Stimulating Speech:

1. Visual induction of verbal activity—"Projective Test" situation.
2. Verbal induction of verbal activity—"Psychiatric Interview" situation.

Language Variables	Mean Percentage of Language Variables in 22 individuals 1. Visual induction of Speech	2. Verbal induction of Speech	3. Percentage Differences	Statistical Significance of Percentage Differences (P)
NIH Group (Eleven subjects not hospitalized for a psychiatric illness)				
Material objects (O)	18.08	16.29	1.79	.0138
Abstractions and "concepts" (C)	11.91	13.05	—1.14	.0718
Verbs (V)	22.81	20.35	2.46	.002
"Measures" (M)	14.21	21.93	—7.72	.001
Verbs of Action (A)	6.46	8.95	—2.49	.001
Adjectives (excluding articles) (adj.)	10.82	11.28	—.46	(not significant)
Negations (N)	1.53	1.38	.15	(not significant)
$\frac{A+O}{A+O+C}$	67.31	65.92	1.39	.3472
$\frac{A}{A+adj.}$	37.37	44.25	—6.88	.001
WRAH Group (Eleven psychiatric in-patients)				
Material objects (O)	21.68	18.42	3.26	.001
Abstractions and "concepts" (C)	10.80	13.31	—2.51	.001
Verbs (V)	24.87	23.80	1.07	.2564
"Measures" (M)	14.66	20.02	—5.36	.001
Verbs of Action (A)	6.93	10.52	—3.59	.001
Adjectives (excluding articles) (adj.)	9.72	10.11	—.39	(not significant)
Negations (N)	2.08	2.26	—.18	(not significant)
$\frac{A+O}{A+O+C}$	72.60	68.49	4.11	.008
$\frac{A}{A+adj.}$	41.62	50.99	—9.37	.001

in the visually induced as compared to the verbally induced verbal samples of the 22 individuals making up the WRAH group and NIH group (See Table VIII.) Inspection of Table VIII reveals that when the subjects were asked to talk about personal experiences they used a significantly greater proportion of verbs of action (A), abstractions and "concepts" (C), and words of "measure (M – i.e., any words implying relationships in time, space, or quantity) than they used when they told stories about a series of pictures. The first stimulus-situation, which we think simulates the psychiatric interview situations, elicited a significantly smaller use of concrete words (O), i.e., words designating material objects (objects with a chemical structure) as compared to the method using the Thematic Apperception test cards. These findings were based on the frequency of use of these categories of words per total words used in each five-minute verbal sample. By this means the figures were corrected for any variations which might result from differences in the rate of speech.

The difference between the mean percentages of the index,

$$\frac{\text{verbs of action (A)}}{\text{verbs of action (A)} + \text{adjectives (adj.)}}$$

derived from each of the two verbal samples produced by the 22 individuals was found to be statistically significant ($P = .001$). This index was significantly greater in the verbal communications stimulated by the verbal method of induction than by the visual method of induction.

Two previous experiments (Part II and Part III) provided evidence that the number of verbs of neuromuscular action plus words designating concrete objects (O) divided by words designating "concepts" or abstractions (C), i.e., the ratio $\frac{A + O}{C}$, was correlated positively with references to situations involving physical injury, "oral inhibition" and "oral satisfaction". The numerical value of this word pattern ($A + O/C$), expressed as a percentage number was not substantially different in the two test situations to which the 22 individuals responded. But when the indices were compared separately for the two groups comprising the 22 individuals, i.e., the WRAH group and the NIH group, a striking difference was noted. The WRAH group, composed of eleven psychiatric in-patients, had significantly different speech patterns (in terms of the difference between the mean percentages of the ratio,

$$\frac{A + O}{A + O + C}$$

in response to the two test situations; whereas, the NIH group composed of eleven individuals not hospitalized for psychiatric illness, showed no significant differences in this aspect of their speech patterns to the two test situations. Although the two groups were matched for age, sex, and race, further studies will be necessary to see whether our observed differences in these speech patterns of the two groups in the two test situations has any practical value, for example, in the screening of individuals with mental illness. The individuals in the two groups were well matched for sex, age, and race, but they were inadequately matched for intelligence and educational background. Since the influence of these factors on the patterns of speech we have studied is not known, verification of our preliminary observations will require not only larger samples of individuals from the two populations but also studies designed to determine what effects, if any, these other factors may have on patterns of verbal activity.

The analysis of the first ten pairs of verbal samples produced by the two individuals under the experimental conditions revealed that there were significant differences in the mean percentages of certain content variables of speech, namely, M%, O%, C%, in reaction to the two test situations (See Table IX).

Special studies with one of these individuals, subject #1, in which the order of presentation of the test situations was alternately reversed, indicated that the order of presentation of these test situations did not substantially modify the relative speech patterns previously observed, in so far as the frequency of use of certain categories of words per unit time is concerned. (There were some minor differences observed in the *form* of verbal behavior, e.g., particularly the rate of speech, which we are investigating further.) We take this as evidence that something intrinsic in the two stimulus situations accounted for the different speech patterns observed rather than the order of presentation of the stimulus-situations.

Discussion:

The results of these studies of verbal behavior clearly indicate that there are significantly definable differences in the patterns of speech elicited and measured in the two standard experimental situations, one of which simulates the relatively unstructured psychiatric interview situation and the

TABLE IX—The Mean Percentages of Certain Categories of Words Used by Two Individuals in Ten Separate Experimental Sessions in which They Responded to Two Different Situations Stimulating Speech.

Language Variables	Mean Percentages of Language Variables in 10 Pairs of Verbal Samples of Two Individuals			Statistical Significance of Percentage Differences (P)
	1. Visual induction of Speech	2. Verbal induction of Speech	3. Percentage Differences	
	Subject No. 1			
Material objects (O)	20.62	12.33	8.29	.001
Abstractions and "concepts" (C)	9.58	14.91	—5.33	.001
Verbs (V)	24.04	17.90	6.14	.001
"Measures" (M)	10.00	19.05	—9.05	.001
Verbs of Action (A)	7.20	8.27	—1.07	.0910
Adjectives (excluding articles) (adj.)	7.76	12.04	—4.28	.001
Negations (N)	1.60	0.86	.74	.....
$\frac{A+O}{A+O+C}$	79.58	58.02	21.56	.001
$\frac{A}{A+adj.}$	48.15	40.72	7.43	.0086
	Subject No. 2			
Material objects (O)	18.61	15.62	2.99	.001
Abstractions and "concepts" (C)	11.87	13.40	—1.53	.0404
Verbs (V)	16.99	18.74	—1.75	.0421
"Measures" (M)	16.03	21.74	—5.71	.001
Verbs of Action (A)	4.15	8.80	—4.65	.001
Adjectives (excluding articles) (adj.)	13.27	12.54	.73	.3370
Negations (N)	1.36	1.48	—.12	.....
$\frac{A+O}{A+O+C}$	65.71	64.46	1.25	.490
$\frac{A}{A+adj.}$	23.84	41.23	—17.39	.001

other of which simulates the more structured projective test situation. Since verbal behavior is one of the primary types of activity on which psychiatrists and psychologists focus their attention in order to make inferences as to the psychologic states and conflicts of an individual, we think that our findings have practical and theoretical relevance to the problem of personality evaluation. Our findings show that different techniques of personality evaluation do provoke certain significantly different patterns of verbal behavior in the same individual. This suggests to us that different techniques of personality evaluation to some extent provoke and measure dissimilar responses of an individual. Or, more accurately, to some extent the patterns of verbal response brought out under our two experimental conditions are similar and do overlap and to some extent the verbal responses are definitely and consistently dissimilar. These findings suggest that it is unlikely that projective test correlates can be found for all behavioral and psychologic patterns observed in the psychiatric interview. And, of course, the reverse of this statement applies. Recent reviews (20, 21) of the projective test literature indicate that many studies have been done or are in pro-

gress aiming to validate projective test results with clinical diagnoses and general behavior. There is evidence that some projective test observations are not relevant to other projective test findings or other means of studying behavior. For the reactions observed may vary with the instructions used, with the individual giving the test, and with the materials used.

It is logical to assume that the setting in which a certain activity occurs has some determining influence upon the activity observed. If we observe one individual in his daily activities outside of the psychiatric interview situation, and then again during such interviews, we expect to see not only common elements but also some activity unique to each of these situations. Our method of verbal behavior analysis is designed to quantify a number of the elements of verbal behavior with the intention that such comparisons can be made.

In the present study the whole range of measurements of variations in the form and content of speech were made, as outlined in Part I. We have at this point analyzed and reported only part of our data, choosing the more broad and general categories of our technique of coding verbal communications as a preliminary exploration of its pertinence and usefulness in understanding human behavior. More detailed analysis of our data may provide us with a better understanding of the significance and implications of the present findings.

Summary and Conclusions:

1. The need for an instrument or technique, in the medical and social sciences, which can aid in the objective quantification of psychologic processes and conflicts as expressed in the clinical interview is emphasized. We have proposed that the systematic analysis of the form and content of small samples of verbal behavior is a fruitful approach to this problem. Our exploratory studies are based on the psychoanalytic viewpoint that behavior is determined by often unreportable motives and drives, sometimes in conflict with one another or the external environment. Accordingly, we have attempted to classify speech, from the level of single words to groups of words, as signs and outward manifestations of psycho-biologic drives and conflicts; we have avoided a strictly grammatical or syntactical classification of language because we doubt whether such a classification has much relevance to psychologic processes.

Details of the practical and theoretical difficulties in this type of approach to quantifying feeling states and emotional conflicts are described and discussed. We have described in detail various materials and procedures we have been using in our exploratory studies. These include: (a) Special apparatus and techniques for the faithful recording and transcribing of speech. (b) Two standard experimental situations for eliciting small samples of spontaneous verbal productions from subjects. (c) A classification of the "form" and "content" of verbal behavior based on our synthesis of personality theory.

2. A 40 year-old woman with idiopathic spontaneous hypoglycemia and a neurotic personality disorder with masochistic features was found during psychoanalytic therapy to show definite variations in the expression of an otherwise deeply inhibited oral incorporative urge from session to session. Variations in the strength of the conflicted urge were found to be associated with variations in the same directions in the rate of use of certain categories of words, symbolized by our formula $\frac{A + O}{C}$ (the number of verbs denoting neuromuscular action, *A*, plus the number of words referring to concrete objects, *O*, divided by the number of words referring to abstractions and concepts, *C*). A check on the significance of this index was carried out by analysis of the thematic content of experimentally induced sam-

ples of speech produced immediately after the psychoanalytic treatment sessions. There was a significant correlation, by the rank-difference method (rho = .96), between the numerical value of the index $\frac{A + O}{C}$ and the total number of references in the experimental verbal samples, based on the ratings by 4 judges, to situations in which a person or animal was exposed to an increased possibility of or actually experienced a physical injury plus the number of references to situations in which a person or animal was exposed to an increased possibility of or actually experienced a delay or interference in taking something by mouth. Another index, $\frac{A}{adj.}$ (the number of verbs denoting neuromuscular action, A, divided by the number of qualifying words, specifically adjectives), was developed which, on the basis of data obtained from psychoanalytic sessions, appeared to be associated with a diffuse drive to action. A significant correlation (rho = .94) was found to exist between the numerical value of this fraction and the total number of reference to situations in which a person or animal was exposed to an increased possibility of or actually experienced physical injury.

We think that the thematic signs in the verbal samples of drives that are not acceptable to the total organism are demonstrations of psychodynamic relationships. The signs, e.g., of possible or actual physical injury to a person or animal, demonstrate the psychologic mechanism of displacement of unacceptable drives to other people or to subhuman animals.

Of considerable interest are the specific findings that drive states and consequent psychological conflicts are reflected in verbal behavior. Our studies show that when this patient used more verbs denoting neuromuscular action (in comparison to qualifying words, such as adjectives, or words referring to some abstraction instead of a material object) she tended to be more active. At these times she produced significantly more words per unit time, made more non-verbal sounds (coughs, sniffs, laughs and so forth) and talked more about situations in which some human or other animal form of life could or did get hurt physically. When she used fewer verbs denoting neuromuscular action (in comparison to qualifying words or words referring to some abstraction) she tended to be less active; she produced fewer words per unit time, was generally less articulate and fluent in her verbal behavior and did not make so many references to situations involving potential or actual physical injury. We think this is a good illustration, to be sure in one subject only, that language patterns and speaking habits may be an objective key to the problem of qualitative and quantitative analysis of psychologic processes and conflicts. The specific relationships we found with this one subject were found to be unique in some respects and to some extent generalizable to other individuals.

3. Five-minute samples of speech elicited under standard conditions from each of 22 subjects were separately analyzed for the frequency of occurrence of certain specific thematic content items and for the relative occurrence of various classes of words. The correlations between these word patterns and the frequency of the thematic content items was contrasted with similar correlations obtained from the analysis of a series of ten such verbal samples from the 40 year-old woman who had spontaneous hypoglycemia.

Comparisons of these correlations obtained from this woman patient and the group of subjects revealed the importance of personal differences in the use of language patterns and their association with the expression of specific ideas. Possible reasons for these findings are discussed.

Evidence is presented which strong-

ly suggests that there is a relationship ($P = .01$) between the rank value of the word pattern A + O/C and the frequency of expression of such ideas as potential or actual physical injury, "oral inhibition", and "oral satisfaction" to a human or sub-human animal.

4. Twenty-two individuals (eleven psychiatric in-patients and eleven subjects not hospitalized for a psychiatric illness) were given instructions to talk for five minutes during each of the two standard experimental situations. (a) In one situation verbal activity was elicited by asking the individual to make up stories about four standard Thematic Apperception test pictures – "projective test situation." (b) In the other situation, verbal activity was elicited by asking the individual to talk about any interesting or dramatic personal life experiences–"psychiatric interview situation".

In addition, two individuals were asked to talk for five minutes in response to both of the above situations for ten or more times, each pair of experimental sessions occurring one or two weeks apart.

Significant differences were found in the patterns of speech produced in one experimental situation as compared to the other. For example, in response to the "psychiatric interview situation", the subjects consistently spoke a significantly higher percentage of verbs denoting neuromuscular action (e.g., run, act, stand, etc.) and words indicating a relationship in time, space, or quantity regardless of grammatical usage (e.g., near, up, gallon, minute, Canada, etc.). Whereas, in response to the "projective test situation", the subjects spoke a significantly larger percentage of words designating material objects (e.g., me, you, Fred, cat, tree, rock).

Suggestive evidence was obtained indicating that five-minute samples of the verbal behavior of psychiatric in-patients may show different patterns of speech in response to the two standard experimental situations as compared to comparable verbal samples produced by subjects not hospitalized for a psychiatric illness. We feel that the importance of other factors possibly influencing patterns of speech, such as intelligence, educational status, social background, must be ascertained before these suggestive findings can be considered more conclusively.

We think our findings raise the question to what extent are projective test findings relevant to predicting a patient's behavior in a psychotherapeutic relationship and vice verse?

5. The research value of a method of recording and analyzing verbal behavior is explored and illustrated.

References

1. Adams, S. and Powers, S. F. The psychology of language. *Psychol. Bull.*, 1929, *26*, 241-260.

2. Baldridge, M. Three decades of language study. *Childh. and Educ.*, 1949, *26*, 117-121.

3. Balken, E. R. Psychological researches in schizophrenic language and thought. *J. Psychol.*, 1943, *16*, 153-176.

4. Balken, E. R. and Masserman, J. H. The language of fantasy: III. The language of fantasies of patients with conversion hysteria, anxiety state, and obsessive-compulsive neurosis. *J. Psychol.*, 1940, *10*, 75-86.

5. Boder, D. C. The adjective-verb quotient: a contribution to the psychology of language. *Psychol. Rec.*, 1940, *3*, 310-343.

6. Bregnance, W. N. The language of a child. *J. appl. Psychol.*, 1934, *18*, 143-154.

7. Buseman, A. Die sprache der jugend als ausdruck der entwicklungsrhythmik. Jena: Fisher, 1925.

8. Cobb, S. Presidential address. *Trans. Amer. Neurol. Assoc.*, 1949, *74*, 1-8.

9. Davis, E. A. Developmental changes in the distribution of parts of speech. *Child Devel.*, 1938, *9*, 309-317.

10. Dewey, John. The psychology of infant language. *Psychol. Rev.*, 1894, *1*, 63-66.

11. Erwin, O. C. Research on speech sounds, for the first six months of life. *Psychol. Bull.*, 1941, *38*, 277-285.

12. Erwin, O. C. Speech sound elements during the first year of life: A review of the literature. *J. Speech Disorders*, 1943, *8*, 109-121.

13. Fairbanks, H. The quantitative differentiation of samples of spoken language. *Psychol. Monogr.*, 1944, *56*, 19-38.

14. Kendall, Maurice G. *Rank Correlation Methods*. London: Charles Griffin Ltd., 1948.

15. Latif, I. The physiological basis of linguistic development and the ontogeny of

meaning. *Psychol. Rev.*, 1934, *41*, 55-85, 153-176, 246-264.

16. Lynip, A. E. The use of magnetic devices in the collection and analysis of the preverbal utterances of an infant. *Genet. Psychol. Monogr.*, 1951, *44*, 221-262.

17. McGranahan, D. V. Psychology of language. *Psychol. Bull.*, 1936, *5*, 178-216.

18. Murray, H. A. Thematic Apperception Test, Manual. Cambridge, Mass.: Harvard University Press, 1943.

19. Pronko, N. H. Language and psycholinguistics; a review. *Psychol. Bull.*, 1946, *43*, 189-239.

20. Ross, W. Donald. Relationships between Rorschach interpretations and clinical diagnoses. *J. project. Techn.*, 1950, *14*, 5-14.

21. Rosvold, H. Enger, Ross, W. D. and Dorken, H. The Rorschach method as an experimental instrument. *J. project. Techn.*, 1954, *18*, 227-232.

22. Sanford, S. H. Speech and personality. *Psychol. Bull.*, 1942, *39*, 811-845.

23. Sanford, F. H. Speech and personality: a comparative case. *Char. and Personal.*, 1942, *10*, 169-198.

24. Sugers, J. C. Language development and meaning. *Rev. educ. Res.*, 1943, *13*, 102-109.

25. Whorf, B. L. The relation of habitual thought and behavior to language. Collected Papers on Metalinguistics, Washington, D.C.: Foreign Service Institute, Department of State, 1952.

26. Zipf, G. R. *The psychobiology of language*. Boston: Houghton-Mifflin Co., 1935.

27. Zucker, L. Psychological aspects of speech melody. *J. soc. Psychol.*, 1946, *23*, 73-128.

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Rorschach Color Theories as Reflected in Simple Card Sorting Tasks

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Psychologists have long been interested in the effect of color upon behavior, not necessarily any specific color but rather the whole spectrum of color as a complete dimension of visual sensation and perception. In one respect, color – referring to hues and exclusive of white, black, and greys – differs from other dimensions of perception. Unlike size, shape, intensity, etc., color is not of necessity present in all perception. Partly in terms of the clinical use of ink blots, certain hypotheses have been suggested in regard to color. Specifically, colors seem to have a long history of association with various emotions. To many people, red connotes anger; green envy; and so on. These associations have led to theories linking color to affect. Rorschach (3) discussed the handling of color in the ink blots in relation to emotional stability and maturity. Schachtel (4) differentiates color from form in terms of the "passivity" of the observer: color strikes the eye of the observer, whereas the eye must seek out form. Schachtel goes on to describe affect, as acting on a "passive" subject with direct and immediate effect, in a manner analogous to color. That is, the subject does not necessarily react to color in terms of the affect which color arouses, but the *manner* in which he reacts to color may parallel the *manner* in which he reacts to affect.

Siipola (5) has offered a third suggestion in regard to the effect of color on the complex processes of perception and verbal response to ink blots. She suggests that the effect of color is due in part to the difficulty of finding percepts which are appropriate to both form and color of the card. The subject delays, or is unable to respond, until a percept comes to mind with which both the form and color are "congruous." In the Rorschach procedure, "incongruous" colors inhibit rapid response. That is, it is disturbing to see a green bear or red grass.

These then are three suggested factors, one or all of which may play a part in the effects of color on perception. To summarize the suggested factors briefly, they are:

1. Colors have a long history of association with various emotions.
2. Color, like affective stimulation, forces itself upon the observer in a way that form does not. And,
3. Color has a disturbing effect on perception or on behavior when it is incongrous in terms of the form perceived.

PURPOSE

The present paper reports two studies exploring the feasibility of using speed in simple card sorting tasks to reflect effects of color and of form. Three hypotheses considered in the first study, and two in the second, may be stated as follows, with a brief comment on the rationale of each hypothesis:

1. Adult subjects will sort faster for color than for form. Rationale: if Schachtel is correct in suggesting that color strikes the eye, then we might predict that our subjects would sort faster for color.
2. The initial presence of colors, from the very first sort, when they

play no part in a form sorting task, will result in poorer performance; and the initial presence of different forms in a color sorting task will similarly result in poorer performance. Rationale: if the inhibiting effect in both cases is present and equal, the result would support Siipola's hypothesis that incongruity, rather than color per se, accounts for the poorer performance. It is as easy to demonstrate "form shock" as "color shock."

3. The introduction of color (or form), after several sorts, when it plays no part in the sorting goal, will result in poorer performance; and the disturbing effects of color and of form will be about equal. Rationale: past affective associations and perceptual qualities of color play a minor role as compared with incongruity. Effects which have been attributed to color may be due merely to any noticeable change in the immediate task conditions.
4. Form sorting will be fastest when the forms are presented in congruous colors, slowest when the forms are presented in incongruous colors, and somewhere between these two speeds when the forms are all black on white. Rationale: this hypothesis was the first of the two hypotheses which the second study was specifically designed to test. If incongruity of color is a major factor in disrupting or *inhibiting* performance, then congruity of color might be expected to result in a parallel *facilitating* effect (1, 5).
5. The effect of color on form sorting speed will be greater for neurotic subjects than for schizophrenic subjects. Rationale: This was the other hypothesis tested in the second study. Clinical experience has linked the effect of color on ink blot responses to neurotic affect, associated either with past emotional associations or with perceptual qualities of color. According to Rorschach's suggestions, neurotics might be most disturbed by the "shock" of incongruous colors; and schizophrenics least affected.

PROCEDURE

First Study: The subjects of the first study were 84 students in the University of Pittsburgh during the summer session of 1952. In an analysis of variance design, each subject performed 10 sorts of 48 cards each. Form cards, color cards, and form-color (F-C) cards were sorted.

Form cards were all black on white, 12 each of four different forms. The forms were heart, club, circle, and tulip. Color cards were all square, 12 each of four different colors: red, yellow, blue, and green. Form-color (F-C) cards were the same four forms and four colors in an equal distribution for each form and for each color.

The cards were sorted into a box with four compartments, each labelled with a stimulus card. For example, the black-on-white form cards were sorted into boxes labelled with a black-on-white heart, club, etc. When form-color cards were sorted, each of the four stimulus cards differed from the other stimulus cards in both form and color.

The subjects in each group performed a given task for eight sorts, and a different task for the last two sorts, as indicated in Table I.

Second Study: The subjects of the second study were 30 neurotic and 30 schizophrenic patients. The groups were matched roughly for age, education, and sex. All were adult subjects over twenty years of age and under fifty. The neurotics were out-patients and the schizophrenics in-patients. Neurotics were used as the group most likely to be affected, and schizophrenics as the group least likely to be affected by color incongruity or congruity. The selection was deter-

TABLE I—Sorting Tasks for the Six Groups

Group	*N*	*Trials 1-8*	*Trials 9-10*
I	14	form cards	F-C cards for form
II	14	color cards	F-C cards for color
III	14	F-C cards for form	F-C cards for color
IV	14	F-C cards for color	F-C cards for form
V	14	form cards	color cards
VI	14	color cards	form cards
	84		

TABLE II—Means and S. D.'s for All Groups on All Trials

Group		*Trials* 1	2	3	4	5	6	7	8	9	10
I	M	38.8	35.6	34.2	32.7	32.9	32.4	32.7	30.6	34.8	30.9
	S.D.	5.0	4.6	4.5	4.8	4.1	4.1	4.1	4.9	5.8	4.8
II	M	40.1	37.8	36.6	35.1	34.3	34.3	32.6	32.5	36.7	32.8
	S.D.	8.1	8.7	8.7	7.8	7.7	8.7	6.3	7.4	10.7	6.8
III	M	44.1	39.3	36.6	36.4	35.1	33.9	32.9	33.1	37.3	31.6
	S.D.	7.6	5.7	5.3	5.6	4.2	4.2	4.2	4.4	5.1	3.2
IV	M	34.7	31.6	31.6	31.6	30.6	30.4	29.6	29.5	42.0	33.5
	S.D.	4.1	3.3	2.3	2.3	1.9	2.2	2.9	1.8	4.6	3.3
V	M	44.6	39.4	39.1	37.3	37.1	37.0	35.6	35.1	34.6	32.9
	S.D.	6.2	5.8	5.0	4.4	5.0	4.3	3.8	4.6	4.1	4.9
VI	M	35.7	32.9	32.4	30.1	31.6	31.1	30.3	29.6	37.3	32.2
	S.D.	7.7	6.1	6.9	4.3	7.8	7.4	7.9	6.6	8.5	7.2

mined by Rorschach's observations and by Siipola's hypothesis.

Each subject sorted three sets of cards, with 48 cards in each set. The subjects always sorted for form, and four simple forms were used: a square, circle, cross, and star.[1]

In one set of 48 cards, all forms were produced in black on a white background. In the second set, each form was produced always in its own, "congruous" color. That is, the squares were always yellow, the circles always red, etc. On the sorting boxes, the cue cards were always the same form and color. The subject always dropped a red circle in a box marked with a red circle.

In the third set of cards, the same four forms and four colors were used. However, the colors were "incongruous" three times out of four. That is, the subject dropped a green circle, or a blue circle, in a box marked with a red circle.

These three sorts represented the three conditions: (1) a control sort, where color was not a factor, (2) congruous colors, and (3) incongruous colors. For each condition, the subjects performed four consecutive sorts.

An analysis of variance design was used, with two groups of subjects, three conditions, and all possible orders (six orders). The two groups were neurotics and psychotics. The three conditions were those just described: control, congruous, and incongruous.

RESULTS

First Study: Table II presents the results of the first study, giving the means in seconds and the standard deviations for all groups on all trials. Differences due to practice are obvious, and there were also slight but significant differences in initial sorting ability for some groups. The differences pertinent to the three

[1] The square, circle, and star replaced the heart, club, and tulip used in the first study. In handling cards, subjects occasionally inverted a card. For this reason, a minor source of error might be eliminated by using forms that looked the same when held in any position.

hypotheses considered are those related to conditions, and to the changes introduced with Trial 9. The essential results for the three hypotheses are as follows:

1. The first hypothesis was confirmed. Under the conditions of this experiment, college students sorted faster for color than for form. This result is significant at the .01 level of confidence.
2. The second hypothesis was not confirmed. Initial presence of incongruous colors in form sorting did not increase the difficulty of the task. Initial presence of incongruous forms in color sorting did not increase the difficulty of the task.
3. The third hypothesis was confirmed. Introduction of incongruous colors at the ninth trial of form sorting increased the difficulty of the task for that trial. However, introduction of varied forms at the ninth trial of color sorting increased the difficulty of the task in the same way. These results are significant at the .01 level of confidence. The increase in difficulty due to introducing form was almost precisely equal to the increase in difficulty due to introducing color.

Second Study: The results of the second study pertinent to the two further hypotheses tested were as follows:

4. The fourth hypothesis was confirmed. Sorting was fastest with congruous colors, slowest with incongruous colors. The control sort speed fell between these two conditions. The mean times in seconds were: control sort (black on white) 42.7; congruous 38.8; and incongruous 44.2. The variance between conditions was significant at the .01 level of confidence.
5. The fifth hypothesis was not confirmed, even to the degree of a tendency in the expected direction. The relative performance of psychotics, under the three conditions, resembled closely the performance of the neurotics. The mean performance of the neurotics was consistently some three seconds faster under each condition, but this difference was not a significant one and has no bearing on the "shock" effect of either color or of color-form incongruity.

DISCUSSION

The significance of the results with these five hypotheses may be related briefly to clinical theories of color and of color shock. Concisely paraphrased, the clinically derived suggestions may be summed up as follows: color has a disruptive effect on the efficiency of certain behavior because color is related to affect. The relation of color to affect may be due to past associations of color and affect, to perceptual qualities of color (Schachtel), or to some combination of these and other factors. The disruptive effect of color is related to neurotic affect and should be more pronounced in neurotics than in schizophrenics (Rorschach). The stress on incongruity as a major factor stems chiefly from experimental studies (1, 5) rather than from clinical studies.

In general, our results must be interpreted as evidence against "color shock" as ordinarily understood clinically. Under the simplified conditions of these experiments, there is no evidence that color is disturbing because of any such factor as past association with various emotions. The first study showed that the introduction of color in a series of sorting trials increased the difficulty of sorting. This increase in difficulty, however, is precisely paralleled by the increase in difficulty when form is introduced in a comparable manner. That is, the disturbance is due to the introduction of a new dimension of perception and not necessarily to the affective value of color itself. Under parallel conditions, "form shock" is

just as disruptive as "color shock."

In the second study, color shock failed to show any differential effect with neurotics as compared with schizophrenics. The bond between color shock and neurotic affect was not supported by the results.

Finally, it should be stressed that the sorting tasks used in these studies are not comparable to the complex perceptual-creative task of interpreting the Rorschach cards. When a subject on the Rorschach sees a man with his head cut off and blood gushing, affect probably plays a part, but this complex percept need not necessarily be attributed to the fact that red per se has a specific affective value for the subject. The key element in the Rorschach situation, that is related to "shock," may not be present in the card sorting tasks. For example, this key element may be neurotic concern about the appropriateness of a response that must reconcile two elements of perceptual reality — form and color. When the neurotic knows what he is supposed to do, in this case sort according to form, he does not have to make a decision in regard to the appropriateness of his behavior. When shown a green cow, on the other hand, he has to decide whether he can call it a cow even though green. This may lead to exaggerated hesitancy or disruption in reporting anything. The psychotic has less concern, or little awareness, in regard to what is or is not appropriate; reality boundaries are vague for him. The normal subject may handle two incongruous perceptual elements in a common sense manner without undue concern.

While such a suggestion may be tested experimentally, the present status of related experimental studies seems clear. Rorschach's observations on color, which he repeatedly stressed were "empirical," have neither been adequately tested nor markedly advanced by experimental approaches.

Conclusions

The results for the five hypotheses and their pertinence to theories of color may be briefly summarized:

1. College students, with these colors and forms, sorted faster for color than for form. With many reservations, this result is at least in keeping with Schachtel's suggestion of the relative immediacy of color perception.
2. *Initial presence* of incongruous color or incongruous form did not effect sorting efficiency in the first study.
3. *Introduction* of either incongruous colors or incongruous forms in the course of a series of sorting tasks, did result in a temporary decrease in efficiency. To over generalize, "form shock" was demonstrated as readily as "color shock."
4. In the second study, congruous colors increased efficiency of sorting, and incongruous colors decreased efficiency. This result, like the previous one, tends to support Siipola's emphasis on incongruity as a major factor in phenomena attributed by clinicians to past affective associations or to basic perceptual qualities of color.
5. When the effect of color on form sorting was studied with a group of neurotics and a group of schizophrenics, color had no differential effect whatsoever for the two groups. Within the limits of this experiment, no evidence was found for a link between color and neurotic affect.
6. Cautions in generalizing from such studies as these to the complex perceptual-creative tasks of interpreting ink blots have been considered briefly in the *Discussion* section.

References

1. Bruner, J. S. and Postman, L. On the perception of incongruity: a paradigm. *J. Pers.*, 1949, *18*, 206-223.

2. Lazarus, R. S. The influence of color on the protocol of the Rorschach test. *J. abnorm. soc. Psychol.*, 1949, *44*, 506-516.
3. Rorschach, H. *Psychodiagnostics.* (4th Ed.) Berne, Switzerland: Hans Huber, 1949.
4. Schachtel, E. G. On color and affect; contributions to an understanding of Rorschach's test, II. *Psychiatry*, 1943, *6*, 393-409.
5. Siipola, E. M. The influence of color on reactions to ink blots. *J. Pers.*, 1950, *18*, 358-382.

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An Evaluation of the Rorschach Method for the Study of Brain Injury

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In the last few years, the Rorschach Method has been used as an instrument of research to study personality changes as a result of organic involvement, drugs, hypnosis, and shock treatment. Since the present paper is concerned with the study of brain injury, reference should be made to a previous study by the writers (7) for a review of the research concerned with the diagnosis of brain injury based on the Rorschach Method.

Briefly summarizing, the signs of organic involvement developed by Aita, Reitan and Ruth (1), Harrower-Erickson (4), Hughes (8), Oberholzer (12), Piotrowski (13), Ross (16, 17), and Ross and Ross (18), give equivocal results when applied to the records of organic patients. Some studies report specific signs as valid, others indicate that signs cannot be relied upon exclusively for the diagnosis of organic defect. Still others show signs to be invalid. As a matter of fact, whatever be the results, most investigators studying the Rorschach records of patients suffering from organic defect emphasize the need to consider qualitative features of the records. Piotrowski himself (14, 15) despite his use of signs, has emphasized the importance of such qualitative features in the record of the organic patients as intellectual passivity, vagueness of perception, and general lack of unity in the personality structure.

Similarly, other investigators have stressed certain qualitative aspects of the Rorschach protocol, failure to think on an abstract level and failure to improve on original concepts (Kelley (9)), intellectual deterioration (Armitage (2), Kogan (11), Zangwell (19)), and anxiety, depression and hypochondriasis and possibly schizophrenic-like disturbances (Aita, Reitan and Ruth (1)).

In the review of the literature on psychological changes in organic lesions and ablations, Klebanoff specifically states

> "... the fundamental value of the qualitative or descriptive reports should not be minimized. Such observations must inevitably be basic to subsequent attempts to apply more accurate, objective and specialized psychological techniques to the measurement of the mental manifestation." (10, p. 586).

Because of the unsatisfactory results obtained in the sign approach and the recognized need to use the qualitative features of the Rorschach record, the present study was designed. The purpose was to study the personality of a group of post-traumatic patients, utilizing a more configurational approach which emphasizes the qualitative as well as quantitative aspects of the Rorschach record.

In the present study a configurational approach was applied to 50 cases of post-traumatic encephalopathy. The hypothesis was offered that a configurational approach emphasizing qualitative as well as the quantitative features of the Rorschach record is effective for the evaluation of the personality of post-traumatic patients and for the diagnosis of organic defect. A further hypothesis was tested out that the experienced Rorschach clinician can identify such configurations with a high degree of reliability despite the subjective nature of this approach.

CONFIGURATIONS

Thirty-four general descriptive psychological configurations were gleaned from the literature. These consisted of traits considered as especially characteristic of the personality structure accompanying organic cerebral involve-

ment. Each of these configurations was described in terms of Rorschach factors, patterns[1] and qualitative features of the record as follows:

1. Intellectual deterioration
   a. Retardation in initial reaction time and total reaction time.
   b. Low number of responses.
   c. Failure to respond to the blots.
   d. Low number of W, low organization or a high number of poor W.
   e. Low %F+ (Ror).
   f. Low number of P.
   g. Memory loss.
   h. Lack of concentration.
   i. Low number of M and/or M— responses.
   j. Failure at abstraction ("Abstr" of Kelley (9)).
   k. Repetition, showing intellectual dysfunction and blocking.
   l. Perseveration showing intellectual dysfunction.
   m. Unclear definitions—subject cannot describe or clarify his response.
   n. Impotence—where response is given although subject is conscious of its inappropriateness and/or incorrectness but does not withdraw it. (Piotrowski's "Imp" (13)).
   o. Stereotyped phrases in indiscriminate fashion (Piotrowski's "AP" (13)).
   p. Confabulatory w h o l e responses in which the subject makes a response to the whole blot from just the stimulus of a detail.

2. Vagueness of perception
   a. Inability to define responses.
   b. Inability to delimit areas.
   c. Inability to clarify concepts on inquiry.
   d. Fuzzy, inadequate, vague thinking.
   e. Confusion regarding positions and regarding various parts of the subject's concepts.
   f. Unusual placements given with no rationale for it.
   g. Inability to develop associations once given.
   h. Inability to refer concept to whole or detailed areas.
   i. Inability to isolate parts of the blot.
   j. Cannot distinguish essential parts of the blot from those of secondary importance; low number of D responses with many Dr.
   k. Low accuracy (low %F+ (Ror.)).

3. Intellectual confusion
   a. Confused regarding positions of various parts of the concept.
   b. May have unusual placement with no rationale for it.
   c. May have many responses.
   d. *Succession* is confused or there is actual disorganization.
   e. Disorganized thinking is shown in *F—O—* and/or *g—O— combinations.*
   f. Becomes easily confused in new situations.
   g. Confabulatory, contaminatory, position and queer responses.

4. Intellectual constriction
   a. Poor output such as low number of responses and low organization.
   b. Refusals persist. Subject cannot do better upon request.
   c. Retardation of reaction time.
   d. Low number of M.
   e. Over 50% F crude.
   f. %F undifferentiated over 75%.
   g. %F+ high, but usually of mediocre and/or poor form quality.
   h. Low % Color responses.
   i. Many vague responses.
   j. Narrow content range.
   k. High % Stereotopy.

5. Intellectual inconsistencies
   a. Failure to give popular responses in cards where they are given frequently.
   b. Poor answers to easy cards,—I, II, V, and X.
   c. Variability in organization (g+ with g—).
   d. Variability in form quality (F+ with F—).
   e. Marked fluctuation in initial reaction time or in the total time per blot or per response.
   f. Marked fluctuation in the number of responses per blot, out of keeping with normal expectancies.

6. Poor intellectual control
   a. Low %F+ (Ror.).
   b. Low or no M.
   c. Easy distractibility. Cannot attend to test; cannot concentrate.
   d. Irrelevant comments showing distractibility, impairment in attention.
   e. Covers parts of cards.
   f. No or low number of FC+Fc+F(C).

7. Intellectual passivity
   a. General quality of basic passivity in record. Subject does not do much to pull out response.

[1] The scoring symbols herein used are those developed by Hertz (6).

b. Shows little effort, inert, sluggish, dull.
c. Gives up easily.
d. Low R.
e. Low W and/or some Wv.
f. Low organization (low g).
g. Actual objects. Subject thinks the pictures are definite objects he is supposed to recognize ("Actual Obj" of Aita et al (1)).
h. Difficult to make the subject see there are no right or wrong answers.
i. Automatic phrases.
j. Subject follows the path of least resistance.

8. Intellectual retardation
   a. Initial reaction time retarded.
   b. Total time per response over one minute.
   c. Low numbers of responses.
   d. Low organization.
   e. Low effort.

9. Intellectual rigidity
   a. Inflexibility. Patient does not use any part of the figure for more than one association ("Inflexibility" of Aita et al (1)).
   b. "Abst." Inability to shift from one concept to another.
   c. Stimulus perseveration. Returns to areas chosen and can't proceed without them. Inability to rearrange areas.
   d. Rigidity in approach.
   e. Persistance in starting from top to bottom regardless of success achieved.
   f. Object perseveration. Gives similar responses in the course of the record.
   g. Repeats the same response in approximately the same manner but tries to make it fit the specific conditions of the areas of the cards.
   h. Holds cards all one way.
   i. Repetition. Repeats the same response in exactly the same manner to at least three blots. At least once this response does not fit the respective area.
   j. Succession is rigid.
   k. Many normal detail responses.
   l. High %F crude.
   m. High % Stereotopy, usually in the form of high % A+Ad.
   n. Narrow content of responses (low %OB).

10. Memory defect
    a. Inability to remember what was said.
    b. Subject can't express himself because he can't remember.

11. Defect in analytic-synthetic ability
    a. Low number of good W.
    b. Low organization score (low g).
    c. Inhibitory details (Do, Dro, So, so) appear.

12. Failure at abstraction
    a. Inability to shift ideas or to give clear definitions of response.
    b. Inability to deal with that which isn't real.
    c. Tendency to consider the blots as actual objects showing extreme concrete thinking ("Actual Obj" of Aita et al (1)).
    d. Inflexibility.
    e. Lack of ability to point out clearly the specific details of the responses all because of the inability to assume the abstract attitude ("Def" of Aita et al (1)).
    f. Inability to use the same figure or detail for more than one association.
    g. No responses given which characterize a quality or attribute of the figure or object mentioned ("Concrete responses" of Aita et al (1)).

13. Lack of planning capacity
    a. Loss of ability to plan ahead, to anticipate things.
    b. Lack of definite plan or method.
    c. Rigid, loose or confused succession.
    d. Low number of good whole responses with low organization score.

14. Circumstantiality
    a. Describing the blot. The blot must fit together.
    b. Rigid adherence to the blots—closeness.
    c. Meticulousness in behavior. Impelled to give evidence for everything. Emphasizes asymmetry.
    d. Object criticism.
    e. Concern over trifling circumstantial factors.

15. Pseudo-profundity
    a. Responses reflect false or deceptive knowledge.
    b. Intellectually pretentious.

16. Peculiar verbalizations
    a. Wrong use or peculiar use of a word.

17. Verbosity and rambling
    a. Subject is unusually talkative and communicative.
    b. Tends to ramble.

18. Stereotyped thinking
    a. Narrow range of interests (low %OB).
    b. Many normal detail responses.
    c. High percentage of animal responses.
    d. Repetition of same form or response to the same areas.

e. Repetition of the same response in exactly the same manner.
f. Stereotyped content other than animal.

19. Loss in learning ability
a. Cannot learn new procedures.
b. Cannot profit from examiner's help.
c. Unproductive despite prodding and suggestions.

20. Emotional Constriction
a. Low productivity.
b. Many whole responses.
c. High %F+ (Ror).
d. High %F crude and/or high %F undifferentiated.
e. M:ΣC wt. is barely 1:1.
f. Absence of shading responses.
g. Constricted *Erlebnystypus*.
h. Behavior may include evasive and noncommittal comments.
i. *Mental approach* may show overemphasis on Dr.
j. Do and Dro may appear.
k. Content may be narrow with high % Stereotopy.
l. Hd may be greater than H.
m. P may be high.
n. O low or non-existent.

21. Emotional inertia
a. Listlessness or apathy reflected in dry monotone voice with which the subject responds.
b. Inactive, indifferent, lack of feeling tone.
c. Low or no color.
d. Few responses to Cards VIII-X.
e. Color cards are of no significance or treated as non-colored cards (Low or no color in cards VIII-X).
f. Inertia, indifference and listlessness to the point of apathy (some CH crude).
g. Many answers where form is the only determinant.

22. Emotional Instability
a. Color naming showing confusion in relation to the environment and/or emotional lability and instability.
b. Vague, indefinite, indistinct type of color shock. Organic type of shock includes time prolongation, irregular succession, crude color responses, color naming and decrease in F+.
c. Catastrophic reactions or overt emotional displays (Aita et al (1)).
d. Impotence and perplexity of Piotrowski (26).
e. Shading shock may be present.
f. Withdrawal and reattack. Subject tries to escape recognition of inadequacy and shows evidence of frustration (Aita et al (1)).
g. Abnormal frequency and abnormal distribution of color responses; high % Color responses. Also Stability Formula score is minus.
h. Unpredictable reactions.

23. Loss of Self-consciousness
a. No or low Fc, FCh, and F(C).
b. No response to any kind of shading showing no evidence of tact, self-consciousness or introspection.

24. Social and emotional withdrawal
a. Low cooperation.
b. Low number of normal detail, animal and popular responses (low D+A+Ad +P).
c. Low or no color responses; or shallow and sterile color responses.
d. May have crude C possibly with CF pointing to withdrawn, self-centered attitudes. Crude C may reflect general withdrawal and loss of emotional contact with reality.
e. No M, H, or FC.
f. Many F— may appear.
g. CH responses may point to withdrawal and resignation.
h. Pure texture responses showing nonsocialized behavior and vague emotionality.
i. Content narrow.
j. Few H. Possibly many Hd.
k. Low percentage of animal responses showing non-conformity.
l. % Anatomy may be high.
m. O— may be high pointing to different, peculiar and/or highly personal thinking.

25. Inability to adapt and conform
a. Low D with low P showing decreased ability to participate in life around.
b. %F+(Ror) low.
c. %A+Ad low.
d. Low D and low P with some original responses.

26. Anxiety and insecurity
a. Behavioral signs as restlessness, perspiration, tremulousness, and complaints.
b. Self-depreciation.
c. Manifestations of uncertainty, lack of personal confidence.
d. Perplexity. Distrusts own ability. Feelings of impotence.
e. Edging-turning cards in all kinds of unusual positions.
f. Card turning.

g. Low number of responses.
h. Many F(C) showing self-awareness, insecurity.
i. Initial reaction time may be long.
j. Many rare detail or many normal detail responses.
k. Many shading responses especially of the Ch variety showing depressed and anxious moods.
l. May have some crude texture.
m. Many inanimate movement responses.
n. Midline emphasis.
o. Symmetry emphasized.
p. Responses to black color (Ch″).
q. Content: — responses show objects broken up, legs disjointed. Clinging concepts. Colors splotched.
r. Dysphoric content.
s. Human detail and animal detail responses greater than whole human and animal responses.
t. Space responses in an ambiequal *Erlebnistypus*.

27. Lack of unity in the personality.
a. No persistence in feeling or attitude.
b. Performance variable in quality, frequently unpredictable from blot to blot.
c. Fluctuation in initial reaction time or total time per blot or response.
d. F+, F— variability.
e. Plus and minus variability in organization.
f. Form — movement — color formula unbalanced.
g. Color plus color-form responses much greater than human movement plus form color responses.

28. Depressed conditions
a. Failures and/or rejection trends.
b. Behavior; protestations of uncertainty, impotence, lack of imagination; expressions of doubt; self-depreciation; question and/or negative form of response; guarded language, stiff and stilted language; qualified responses; pedantic self-correction; critical or caustic remarks; painful compliance.
c. Low productivity with small output of talk.
d. Ordinary, crude, or non-committal responses with many P.
e. Slow or retarded reaction time.
f. *Mental Approach* qualitatively impaired.
g. *Succession* tends to be rigid.
h. %F crude and %F undifferentiated high.
i. %F+ (Ror) high, but form qualitatively mediocre or poor.
j. No or low M.
k. Low color. Unstable color may appear. FC usually low.
l. Ch responses and/or shading shock.
m. Content narrow. May be monotonous. High %Stereotopy. Many Hd and Anatomy may appear. Dysphoric content. References to death, disease, deterioration. Anxiety content. Religious references.
n. Descriptive responses frequent.
o. Perseveration of same response and/or same train of thought.

29. Satisfaction with inferior performance
a. Color naming given as a response. Patient is satisfied with this as a response.
b. Repetition of the same form or response to the same areas.
c. Repetition of the same response in exactly the same manner to several cards, despite the fact many do not fit the respective areas.
d. Inability to perceive defects.

30. Lack of interest
a. Low number of responses.
b. Few responses other than animal, human or anatomy (low %OB, low Var).
c. May give many anatomy responses.
d. Behavior shows general apathy.

31. Fatigability
a. Gives up easily.
b. Irritability.
c. Diminished capacity for enjoyment.
d. Lessened spontaneity.
e. Lack of freshness.

32. Schizophrenic-like conditions
a. Unexpected failures after apparent fluency.
b. Peculiar and/or bizarre verbalizations.
c. Abnormal Dr emphasized.
d. Variability in form quality.
e. Contamination and confabulations.
f. Peculiar organization and construction.
g. Position responses.
h. Crude color especially color deterioration.
i. Other patterns generally associated with the schizophrenic picture.

33. Maximum performance
a. Utilization of total ability in original test.
b. Cooperative, attentive, tries to do his best.
c. Unable to improve even with effort

and even if help is given.

d. Perseveration.

e. Repetition.

f. Evidences of intense drive to succeed.

34. Extratensive activity

a. Hyperactivity.

b. Unrestrained responsiveness to outside stimulation.

It may be noted that several of the same factors and patterns appear in many of the configurations. It must be remembered, however, that each is to be interpreted in terms of the context in which it appears, and hence, while the patterns may appear the same, their meanings may be different, depending upon the configuration in which they are imbedded.

PROCEDURE

The Rorschach records of three groups of patients including post-traumatic cases, non-organic psychotic and neurotic patients were scored according to the Hertz (5) scoring system and summarized on detailed Rorschach psychograms (6). Each record was interpreted individually and was

TABLE I—Reliability Study: Chi Square Test of Significance and Phi Values Indicating the Degree of Agreement Between Two Rorschach Interpreters in Identifying the 34 Descriptive Psychological Configurations

Configuration	fo	fe	X^2	P	ϕ
1. Intellectual Deterioration	20	12	10.67	.01	.67
2. Vagueness of Perception	20	12	10.67	.01	.67
3. Intellectual Confusion	21	12	13.42	.01	.75
4. Intellectual Constriction	21	12	13.42	.01	.75
5. Intellectual Inconsistencies	21	12	13.42	.01	.75
6. Poor Intellectual Control	23	12	20.17	.01	.92
7. Intellectual Passivity	17	12	4.17	.05	.42
8. Intellectual Retardation	18	12	6.0	.02	.50
9. Intellectual Rigidity	20	12	10.67	.01	.67
10. Memory Defect	23	12	20.17	.01	.92
11. Analytic-Synthetic Defect	19	12	8.17	.01	.58
12. Failure at Abstraction	23	12	20.17	.01	.92
13. Lack of Planning	23	12	20.17	.01	.92
14. Circumstantiality	21	12	13.42	.01	.75
15. Pseudo-Profundity	24	12	24.0	.01	1.00
16. Peculiar Verbalization	24	12	24.0	.01	1.00
17. Verbosity and Rambling	24	12	24.0	.01	1.00
18. Stereotyped Thinking	23	12	20.17	.01	.92
19. Loss of Learning Ability	20	12	10.67	.01	.67
20. Emotional Constriction	23	12	20.17	.01	.92
21. Emotional Inertia	22	12	16.67	.01	.83
22. Emotional Instability	21	12	13.42	.01	.75
23. Loss of Self-Consciousness	22	12	16.67	.01	.83
24. Social Withdrawal	19	12	8.17	.01	.58
25. Inability to Adapt and Conform	20	12	10.67	.01	.67
26. Anxiety and Insecurity	22	12	16.67	.01	.83
27. Lack of Unity	20	12	10.67	.01	.67
28. Depressed Conditions	20	12	10.67	.01	.67
29. Satisfaction with Inferior Performance	16	12	2.67	.11	.33
30. Lack of Interests	23	12	20.17	.01	.92
31. Fatigability	18	12	6.0	.02	.50
32. Schizophrenic-like Features	20	12	10.67	.01	.67
33. Maximum Performance	18	12	6.0	.02	.50
34. Extratensive Activity	23	12	20.17	.01	.92

Key

fo = observed frequency

fe = expected frequency

P = Probability value

ϕ = Phi value

analyzed by one of the writers (L. Loehrke) for the configurations which were identified as reflecting organic defect. A summary sheet for each record listed the configurations as present or absent. This global approach required the evaluation of each configuration in a record to be made in terms of available normative data plus the subjective judgments of the examiner based on the more qualitative features of the record. In order to make the evaluation as objective as possible, the investigator adhered as strictly as possible to the descriptions of each configuration, as listed.

Summaries were made of the frequency and distributions of the configurations in each group, medians, quartiles, and semi-interquartile ranges calculated and the significance of the differences between the medians of each group calculated. The "t" values were interpreted with 98 degrees of freedom and the five per cent level of confidence used. In addition, each configuration was examined in order to determine its efficiency in differentiating the organic from the contrasting groups. This was done by computing the proportion of each group showing a specific configuration and testing the significance of the differences between the proportions. Finally, the whole procedure was repeated, this time using only those configurations which were found to differentiate the groups reliably.

Subjects

The Rorschach records of three groups of patients, 50 in each were selected from the files of the Psychology Department of the Veterans Administration Hospital, Cleveland, Ohio. All were white male veterans of World War II. A total of 50 records was included in each group. The sample was selected without bias, with intelligence, social background, education and occupation ranging from low average to above average.

The reader may refer to the previous article (7) for a full description of the groups studied. Suffice to say here that for all subjects, ages ranged from 20 to 50 years. Groups were comparable in terms of education. The neurotic group had the highest level of occupational achievement and the schizophrenics the lowest.

Reliability

In order to determine the reliability of judgments based on the general descriptive categories which were developed on the basis of clinical intuition and subjective judgments, 24 records selected at random were evaluated by a second Rorschach interpreter (M. R. Hertz) to determine extent of agreement.

The Chi-Square test was employed to evaluate the degree of significance of agreement between the two interpreters. Table I shows that significant agreement was demonstrated on 33 of the 34 configurations at the five per cent level or better. The exception, "satisfaction with inferior performance" was reliable at the 11 per cent level of confidence. The Phi values were all .50 or better with the same exception which was .33. These results would seem to indicate that two experienced Rorschach interpreters can reliably identify the presence or absence of these general descriptive configurations.

Results

Of the 34 configurations studied (Table II), the post-traumatic group gave a median of 16.4, Q 3.79, configurations as compared to a median of 13.0, Q 2.74, given by the schizophrenic group and a median of 10.5, Q 2.28, given by the neurotic. The differences between the medians were significant below the one per cent level. Thus the post-traumatic group gave more of the configurations reflecting organic difficulty than either of the contrasting groups. Computing the cumulative frequency and cumulative percentages for each group, it was observed that the post-traumatic group gave between 4 and 27 config-

urations as compared to the schizophrenic group which gave between 7 and 21, and the neurotic group which gave between 4 and 19. It was also seen that 38 per cent of the post-traumatic group gave 18 configurations as compared to 18 per cent of the schizophrenic group and 2 per cent of the neurotic group.

Taking a five per cent level of confidence or less (Table III), 25 configurations were found to differentiate reliably between the post-traumatic group and the schizophrenic and/or the neurotic groups:

1. Intellectual deterioration
2. Vagueness of perception
3. Intellectual confusion
4. Intellectual constriction
5. Intellectual inconsistencies
7. Intellectual passivity
8. Intellectual retardation
9. Intellectual rigidity
10. Memory defect
11. Analytic-synthetic defect
12. Failure at abstraction
14. Circumstantiality
16. Peculiar verbalizations
18. Stereotyped thinking
19. Loss in learning ability
20. Emotional constriction
21. Emotional inertia
23. Loss of self-consciousness
25. Inability to adapt and conform
29. Satisfaction with inferior performance
30. Lack of interests
31. Fatigability
32. Schizophrenic-like features
33. Maximum performance
34. Extratensive activity

TABLE II—Total Number of Configurations, Medians, and Quartiles and Probability Values Indicating the Reliability of the Differences Between the Medians of Each Group

	P-T (n = 50)	S (n = 50)	N (n = 50)
Total	807	680	525
Mdn	16.4	13.0	10.5
Q_1	12.8	10.5	8.25
Q_3	20.38	16.38	12.8
Q	3.79	2.74	2.28
PE Mdn	.6786	.4906	.4082
SE Mdn	1.0060	.7273	.6052

	t	P
P-T–S	2.74	<.01
P-T–N	5.03	<.01
S–N	2.64	<.01

Key
P-T = Post-traumatic
S = Schizophrenic
N = Neurotic
P = Probability
t or critical ratio

Of these 25 reliable configurations, more of the post-traumatic group than both the schizophrenic and neurotic groups gave the following eleven configurations: 8, 9, 10, 11, 19, 20, 21, 29, 30, 31, 33. In addition, significantly more of the post-traumatic group than the schizophrenic group gave configuration 4, and significantly more of the post-traumatic group than the neurotic group gave the following eight configurations: 1, 2, 3, 7, 12, 16, 18, 23. Thus significantly more of the post-traumatic group than the schizophrenic and/or neurotic groups gave 20 configurations:

1. Intellectual deterioration
2. Vagueness of perception
3. Intellectual confusion
4. Intellectual constriction
7. Intellectual passivity
8. Intellectual retardation
9. Intellectual rigidity
10. Memory defect
11. Analytic-synthetic defect
12. Failure at abstraction
16. Peculiar verbalization

18. Stereotyped thinking
19. Loss in learning ability
20. Emotional constriction
21. Emotional inertia
23. Loss of self-consciousness
29. Satisfaction with inferior performance
30. Lack of interests
31. Fatigability
33. Maximum performance

Significantly fewer of the post-traumatic group than the schizophrenic and/or the neurotic groups showed five configurations (Table III):

5. Intellectual inconsistencies
14. Circumstantiality
25. Inability to adapt and conform
32. Schizophrenic-like features
34. Extratensive activity

The following Rorschach configurations representing traits considered especially characteristic of patients suffering from organic involvement were not found with any degree of significance (Table III) in the present group of post-traumatic patients when compared with the schizophrenic and neurotic groups:

6. Poor intellectual control
13. Lack of planning capacity
15. Pseudo-profundity
17. Verbosity and rambling
22. Emotional instability
24. Social withdrawal
26. Anxiety and insecurity
27. Lack of unity in the personality
28. Depressed conditions

While these configurations are not significantly characteristic of the post-traumatic group, configurations 6, 13, 24, 26, and 27 occur in over half of the post-traumatic group.

It is of interest to note in Table III that very few of the post-traumatic group gave configuration 17, Verbosity and rambling, and configuration 15, Pseudo-profundity.

It may be recalled that Aita, Reitan and Ruth (1) reported that their study indicated that anxiety, depression, and hypochondriasis were frequently present in the group of 60 post-traumatic brain injured patients as compared with 100 control patients, and that schizophrenic-like disturbances were occasionally present among the brain injured patients. In the present study, while 90 per cent of the post-traumatic group showed anxiety and insecurity, 90 per cent of the schizophrenic group and 76 per cent of the neurotic group also showed anxiety. This configuration did not differentiate the present groups. Again, while 42 per cent of the post-traumatic group showed depressed conditions, 40 per cent of the schizophrenic and 32 per cent of the neurotic patients also showed these conditions. It may be recalled that, only a small per cent of the post-traumatic group (20%) showed configuration 32, schizophrenic-like features, as compared to 92 per cent of the schizophrenic group and 38 per cent of the neurotic group. Reliably fewer of the post-traumatic group than either the schizophrenic or the neurotic groups showed these features.

It is of interest to compare the schizophrenic and neurotic groups on the 34 configurations. Significantly more schizophrenic than neurotic patients scored on thirteen configurations, 1, 2, 3, 5, 7, 12, 14, 16, 18, 19, 23, 29, 32, and significantly more neurotic patients than schizophrenic gave configurations 4 and 9.

Analysis of Reliable Configurations

It will be recalled that reliably more of the post-traumatic group than the schizophrenic and/or neurotic groups showed 20 configurations. Analyzing these (Table IV) the post-traumatic group gave a median of 10.0, Q 2.90, reliable configurations as compared to a median of 5.7, Q 2.30, given by the schizophrenic group and 3.83, Q 1.72, given by the neurotic group.

On the basis of the cumulative frequency and the cumulative percentages of the groups on the 20 reliable configurations it was observed (Table V) that 78 per cent of the post-traumatic group gave 8 or more of these

TABLE III—The Proportion of Each Group Giving Each Configuration, The Differences Between Them and The

TABLE III—The Proportion of Each Group Giving Each Configuration, The Differences Between Them and The Reliability of the Differences

Configuration	P-T	S	N	P-T–S Diff	P-T–S P	P-T–S High	P-T–N Diff	P-T–N P	P-T–N High	S–N Diff	S–N P	S–N High
	%	%	%	%			%			%		
1. Intellectual Deterioration	40	26	8	.14	.14	P-T	.32	.001*	P-T	.18	.02*	S
2. Vagueness of Perception	46	52	26	.06	.55	S	.20	.05*	P-T	.26	.01*	S
3. Intellectual Confusion	32	28	12	.04	.67	P-T	.20	.02*	P-T	.16	.05*	S
4. Intellectual Constriction	58	20	44	.38	.001*	P-T	.14	.17	P-T	.24	.02*	N
5. Intellectual Inconsistencies	56	80	60	.24	.02*	S	.04	.69	N	.20	.03*	S
6. Poor Intellectual Control	56	48	38	.08	.42	P-T	.18	.08	P-T	.10	.32	S
7. Intellectual Passivity	54	48	24	.06	.55	P-T	.30	.01*	P-T	.24	.02*	S
8. Intellectual Retardation	70	40	42	.30	.01*	P-T	.28	.01*	P-T	.02	.84	N
9. Intellectual Rigidity	64	22	42	.42	.001*	P-T	.24	.02*	P-T	.20	.04*	N
10. Memory Defect	20	4	6	.16	.02*	P-T	.14	.05*	P-T	.02	.65	N
11. Analytic-Synthetic Defect	54	10	10	.44	.001*	P-T	.44	.001*	P-T	.00	1.0	
12. Failure at Abstraction	18	12	0	.06	.41	P-T	.18	.01*	P-T	.12	.02*	S
13. Lack of Planning Capacity	62	58	52	.04	.69	P-T	.10	.32	P-T	.06	.55	S
14. Circumstantiality	30	52	32	.22	.03*	S	.02	.84	N	.20	.05*	S
15. Pseudo-profundity	2	2	2	.0	1.0		.0	1.0		.00	1.0	
16. Peculiar Verbalization	14	20	2	.06	.43	S	.12	.03*	P-T	.18	.01*	S
17. Verbosity and Rambling	6	8	6	.02	.57	S	.0	1.0		.02	.57	S
18. Stereotyped Thinking	58	50	28	.08	.43	P-T	.30	.01*	P-T	.22	.03*	S
19. Loss in Learning Ability	62	64	14	.20	.05*	P-T	.48	.001*	P-T	.28	.01*	S
20. Emotional Constriction	54	32	34	.22	.03*	P-T	.20	.05*	P-T	.02	.84	N
21. Emotional Inertia	64	28	40	.36	.001*	P-T	.24	.02*	P-T	.12	.21	N
22. Emotional Instability	42	48	58	.06	.55	S	.16	.11	N	.10	.32	N
23. Loss of Self-Consciousness	52	62	22	.10	.32	S	.30	.01*	P-T	.40	.001*	S
24. Social Withdrawal	68	72	58	.04	.67	P-T	.10	.30	P-T	.14	.15	S
25. Inability to Adapt and Conform	44	88	76	.44	.001*	S	.32	.01*	N	.12	.12	S
26. Anxiety and Insecurity	90	90	76	.0	1.0		.14	.07	P-T	.14	.07	S
27. Lack of Unity in Personality	58	62	62	.04	.69	S	.04	.69	N	.00	1.0	
28. Depressed Conditions	42	40	32	.02	.84	P-T	.10	.30	P-T	.08	.41	S
29. Satisfaction With Inferior Performance	56	66	0	.40	.0001*	P-T	.56	.0001*	P-T	.16	.01*	S
30. Lack of Interests	72	50	48	.22	.03*	P-T	.24	.02*	P-T	.02	.85	S
31. Fatigability	62	6	0	.56	.0001*	P-T	.62	.0001*	P-T	.06	.08	S
32. Schizophrenic-like Features	20	92	38	.72	.0001*	S	.18	.05*	N	.54	.0001*	S
33. Maximum Performance	58	14	10	.44	.0001*	P-T	.48	.0001*	P-T	.04	.54	S
34. Extratensive Activity	28	38	48	.10	.29	S	.20	.05*	N	.10	.32	N

Key P-T Post-traumatic Diff % Differences between proportions of the groups High Higher frequency in group
S Schizophrenic P Probability Value N Neurotic * Significance at the .05 level or better

TABLE IV--Configurations Given by Reliably More of the Post-Traumatic Group than the Contrasting Groups: Total Number, Medians, Quartiles, and Estimates of the Reliability of the Differences Between the Medians

	P-T	S	N
Total reliable configurations	498	292	195
Mdn	10.00	5.70	3.83
Q_1	7.69	3.40	2.28
Q_3	13.50	8.00	5.72
Q	2.90	2.30	1.72
PE Mdn	.519	.411	.308
SE Mdn	.769	.609	.471

	t	P
P-T–S	10.63	<.01
P-T–N	6.84	<.01
S–N	7.68	<.01

Key

P-T Post-traumatic
S Schizophrenic
N Neurotic
P Probability value

reliable configurations as compared to 28 per cent of the schizophrenic group and 4 per cent of the neurotic group. Therefore it was felt that this could be tentatively taken as a cutting score. It was concluded that if 8 or more of these reliable configurations appear in a record, organic involvement was reflected.

In the present data, using this cutting point, 78 per cent of the post-traumatic patients were correctly identified as organic and 72 per cent of the schizophrenic patients and 96 per cent of the neurotic patients were correctly identified as non-organic. On the other hand, 22 per cent of the post traumatic group, 28 per cent of the schizophrenic group and 4 per cent of the neurotic group were falsely identified. Thus of the 150 patients, 123 or 82 per cent of the total group would be correctly identified as organic and non-organic as opposed to 27 or 18 per cent which would be falsely identified.

It is interesting to note that in the previous study by the writers (7), the Hughes' battery of organic signs (8) and the Piotrowski (13) signs of organic involvement were applied to the three groups herein employed. It was found that 82 per cent of the post-traumatic group would have been diagnosed incorrectly on the basis of the Hughes' criteria, and only 6 per cent would have been diagnosed as definitely organic. Again, it was demonstrated that while Piotrowski's criteria of five or more signs in a record are valid in differentiating the post-traumatic group from the schizophrenic and the neurotic groups, only 13 or 26 per cent of the post-traumatic group was diagnosed as organic. Thus it appears that with the configurational approach, more correct identifications were made in the post-traumatic group.

It will be recalled that five additional reliable configurations differentiated the post-traumatic group from the schizophrenic and/or neurotic groups, *fewer* of the post-traumatic patients showing them. These included configurations 5– intellectual inconsistencies, 14–circumstantiality, 25 –inability to adapt and conform, 32– schizophrenic-like features and 34 – extratensive activity. These configurations then cannot be said to be specifically associated with the organic picture. Indeed, as has been indicated, configurations 5, 14, and 32 are more

reflective of schizophrenic features, and configuration 34 more reflective of neurotic traits and configuration 25 more reflective of either the schizophrenic or the neurotic picture.

Hypothesis one seems to be verified. A configurational approach which utilizes patterns studied in their dynamic inter-relationships in the individual Rorschach record is effective in evaluating personality characteristics which accompany organic defect.

Hypothesis two is likewise verified. A skilled interpreter is able to describe the personality of the post-traumatic patient on the basis of general descriptive configurations intuitively arrived at with a high degree of reliability.

CONCLUSIONS

In the present study specific Rorschach configurations pointing to the presence of personality deviation accompanying organic defect are studied by comparing a group of post-traumatically brain injured patients with selected groups of patients with paranoid schizophrenia and neurotic disorders but free from organic defect. The configurational approach is utilized rather than individual signs because it is felt that this type of approach includes the qualitative features of the Rorschach record as well as the quantitative and evaluates Rorschach patterns in terms of the individual record. Specific Rorschach configurations are identified and found to be specifically characteristic of the post-traumatic picture.

Intellectual retardation, intellectual rigidity, memory defect, defect in analytic-synthetic ability, loss in learning ability, emotional constriction, emotional inertia, satisfaction with inferior performance, lack of interests, fatigability, and maximum performance are especially significant since they differentiate the post-traumatic group from both the schizophrenic and neurotic groups. Rapid fatiguing when confronted by new tasks involving mental effort, loss of freshness and

TABLE V — Number of Configurations Given by Reliably More of the P-T Group than the Contrasting Groups Showing the Differences Between the Proportions and the Significance of These Differences

Configurations	P-T	S	N	P-T—S			P-T—N			S—N		
				Diff	P	High	Diff	P	High	Diff	P	High
	%	%	%	%			%			%		
10 or more	56	14	02	42	.0001*	P-T	54	.0001*	P-T	12	.03*	S
9 or more	62	22	02	40	.0001*	P-T	60	.0001*	P-T	20	.01*	S
8 or more	78	28	04	50	.001*	P-T	74	.0001*	P-T	24	.01*	S
7 or more	80	34	14	46	.001*	P-T	66	.0001*	P-T	20	.02*	S
6 or more	80	54	28	26	.02*	P-T	52	.0001*	P-T	26	.01*	S
5 or more	88	58	38	30	.02*	P-T	50	.0001*	P-T	20	.03*	S
4 or more	90	74	56	16	.07	P-T	38	.01*	P-T	18	.15	S
3 or more	90	88	72	2	.73	P-T	18	.06	P-T	16	.08	S

spontaneity and inability to enjoy the task, all reflected in configuration 31, fatigability, appear to be especially characteristic of the post-traumatic picture. Satisfaction with an inferior performance, (Configuration 29) is also a distinguishing feature of the post-traumatic record. The post-traumatic patient may not see his defects and may give a poor performance without worry or anxiety and may show a generally low level of motivation. Again, maximum performance (Configuration 33) is a distinguishing characteristic. The post-traumatic patient frequently does the best he can, cooperating well, putting forth maximum effort in his initial attack on a problem but is not able to improve on his original performance. The post-traumatic group is likewise characterized by analytic-synthetic defect (Configuration 11). The patient cannot analyze situations into their component parts, nor can he organize parts into more comprehensive wholes.

A small proportion of post-traumatic patients show memory defects (Configuration 10). They cannot remember what they said; they cannot express themselves fully because they cannot remember their experiences. This defect appears infrequently in the post-traumatic patients. When it does appear in a record, however, it may be said to point to a personality defect characteristic of the post-traumatic group.

The post-traumatic picture is also characterized by a general retardation in the flow of thought and slowness in adapting to new situations. Inflexibility in thinking, stiff mental procedure, rigid mental control, and other manifestations of intellectual rigidity also go with the post-traumatic picture. Again, listlessness and apathy, feeble responsiveness to emotional stimulation and general emotional inertia may characterize the post-traumatic patient. It must be remembered, however, that these characteristics may also appear in neurotic pictures. Lack of interests and highly circumscribed thought content are highly suggestive of the post-traumatic picture although these features also occur with considerable frequency in schizophrenic and neurotic pictures.

Inability to learn new procedures and inability to profit from help and instruction all subsumed under loss of learning ability are also reflective of the post-traumatic picture.

Emotional constriction is likewise seen in the post-traumatic group. Similarly suggestive is intellectual constriction although it must be remembered that this may also characterize the neurotic group.

Again, the post-traumatic patient is characterized by vagueness of perception, intellectual inertness, sluggishness and passivity, stereotyped thinking and loss of self-consciousness, characteristics which also appear to some extent in the schizophrenic group.

Additional features which characterize the post-traumatic group, although they appear infrequently, include intellectual deterioration, intellectual confusion, failure at abstraction and peculiar verbalization. Thus, post-traumatic patients sometimes show definite impairment in intellectual functioning, often resulting in intellectual confusion. Another disability which, when it appears, is highly differentiating is the inability of the patient to describe or define responses, to explain his responses, or to give adequate evidence for his interpretations. While the defects enumerated above may appear in a small number of patients, when they occur in a record, they may be said to reflect either post-traumatic conditions and/or schizophrenic pictures.

It is also demonstrated that characteristics as intellectual inconsistencies, circumstantiality, schizophrenic-like features, extratensive activity, and inability to adapt and conform, all suggested in the literature as pointing to personal traits in organic pictures, are not characteristic of the post-traumatic. While the post-traumatic patient may show intellectual inconsist-

encies and may resort to circumstantiality, these features are found more frequently with the schizophrenic group. Again, inability to adapt and conform occurs with much less frequency in the post-traumatic picture than in the schizophrenic and neurotic pictures. While schizophrenic-like conditions may occur in the post-traumatic picture, they are more characteristic of other clinical groups. Finally, the post-traumatic patient does not show hyperactivity; he is not characteristically very extratensive and overresponsive to outside stimulation. In the present data, these features are more characteristic of the neurotic picture.

According to present results, if 8 or more of the reliable configurations which are more characteristic of the post-traumatic group appear in a Rorschach record, personality traits accompany post-traumatic brain injury are indicated.

The validity of the conclusions so far advanced in reference to characteristic features of the post-traumatic picture may be strengthened if other configurations are taken into consideration, despite the fact that they are not found to be more reflective of the post-traumatic picture with any acceptable degree of reliability. Anxiety and insecurity, social withdrawal, emotional instability, poor intellectual control, lack of planning capacity, and lack of unity in the personality structure occur frequently in the records of the post-traumatic patient although they are not necessarily restricted to this group. A very large proportion of the post-traumatic patients show anxiety and insecurity, often showing these conditions in overt behavior such as restlessness, tremulousness, complaints and anxious, cautious, guarded behavior. Many show depressed conditions with self-depreciation, self-condemnation, self-reproach and much guilt in evidence. Similarly, many of the post-traumatic patients show poor intellectual control, lack of planning capacity, emotional lability, instability and withdrawal, poor social adaptiveness, variability and lack of predictability, and general lack of unity in the personality. Thus, in addition to the more characteristic features discussed above, these additional traits appearing in a Rorschach record may give further evidence of the presence of organic pathology. On the other hand, verbosity and rambling and pseudo-profundity are not specifically characteristic of the organic picture.

Thus, using the configurational approach, the Rorschach method is able to differentiate between post-traumatically brain injured patients and schizophrenic and neurotic patients without organic pathology. The configurational approach in which Rorschach patterns are studied in their dynamic interrelationships within the individual record and in which the qualitative features of the record are considered, appears to be effective in describing the personality of the post-traumatic patient, detecting personality deviation and diagnosing organic cerebral dysfunction. These configurations are therefore offered for further study and verification by other Rorschach clinicians. The use of the configurational approach depends upon interpretive skill which comes with extensive experience and training. It is our belief that the configurational approach can be made systematic and can attain a practical degree of objectivity.

The present study offers further evidence that the Rorschach method if used by trained and experienced clinicians, is able to detect personality deviations associated with post-traumatic encephalopathy and hence is of value in determining the presence of organic pathology. The present study justifies the use of the Rorschach method in the diagnosis of organic cerebral involvement.

REFERENCES

1. Aita, J. A., Reitan, R. M., and Ruth, Jane M. Rorschach's test as a diagnostic aid

in brain injury. *Amer. J. Psychiat.*, 1947, *103*, 770-779.

2. Armitage, S. G. An analysis of certain psychological tests used for the evaluation of brain injury. *Psychol. Monog.*, 1946, *60*, 1-48.

3. Diers, W. C. and Brown, C. C. Rorschach "organic signs" and intellectual level. *J. consult. Psychol.*, 1951, *15*, 343-345.

4. Harrower-Erickson, M. R. Personality changes accompanying cerebral lesion; Rorschach studies of patients with cerebral tumors. *Arch. Neurol. Psychiat.*, 1940, *43*, 859-890.

5. Hertz, Marguerite R. *Frequency tables for scoring responses to the Rorschach inkblot test.* Third Edition. Cleveland: Press of Western Reserve University, 1951.

6. Hertz, Marguerite R. *The Rorschach Psychogram.* Cleveland: Press of Western Reserve University, 1951.

7. Hertz, Marguerite R. and Loehrke, Leah M. The Application of the Piotrowski and the Hughes Signs of Organic Defect to a group of patients suffering from post-traumatic encephalopathy. *J. of Project. Techni.*, 1954, *18*, 183-196.

8. Hughes, R. M. Rorschach signs for the diagnosis of organic pathology. *Ror. Res. Exch.*, 1948, *12*, 163.

9. Kelley, D. M. The Rorschach method as a means for the determination of the impairment of abstract behavior. *Rors. Res. Exch.*, 1941, 5, 85.

10. Klebanoff, S. G. Psychological changes in organic brain lesions and ablations. *Psychol. Bull.*, 1945, *42*, 585-623.

11. Kogan, Kate L. The diagnosis of a patient's organic defect. *J. Personality*, 1946, *15*, 113-120.

12. Oberholzer, E. Zur Differential diagnose psychischer Folgezustande nach Schadeltraumen mittels des Rorschachschen Formdeutversuch. *Zsch. f. d. ges. Neurol. u. Psychi.*, 1931, *36*, 596-629.

13. Piotrowski, Z. On the Rorschach method and its application in organic disturbances of the central nervous system. *Ror. Res. Exch.*, 1936-37, *1*, 23-40.

14. Piotrowski, Z. Rorschach study of a case of Pick's disease. *Ror. Res. Exch.*, 1936-37, *1*, 65-77.

15. Piotrowski, Z. Positive and Negative Rorschach organic reactions. *Ror. Res. Exch.*, 1940, *4*, 147-151.

16. Ross, W. D. The contribution of the Rorschach method to clinical diagnosis. *J. ment. Sci.*, 1941, *87*, 331-348.

17. Ross, W. D. Notes on Rorschach signs in diagnosis and research. *Ror. Res. Exch.*, 1942, *6*, 115-116.

18. Ross, W. D. and Ross, S. Some Rorschach ratings of clinical value. *Ror. Res. Exch.*, 1944, *8*, 1-9.

19. Zangwill, O. L. Observations on the Rorschach test in two cases of acute concussional head injury. *J. Ment. Sci.*, 1945, *91*, 322-336.

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Personality Projection on Culturally Structured Symbols

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The experimental studies which followed in the wake of the design and standardization of a technique of personality evaluation by means of specific plastic objects (4, p. 10) concerned themselves exclusively with clinical groups. The inroads of cerebral pathology on the capacity to interpret symbols prompted the author to compare a group of fifty patients having brain pathology with a non-brain-damage group. Using t-ratios as the statistical method, a total of 197 responses were compared. Fifty-nine of these responses differentiated the two groups at better than the 1% level, while 40 other responses were statistically significant to a lesser extent (6, p. 443). Another early study by Fils (3), compared 50 schizophrenics with a matched group of normals and found 56 out of a total of 113 responses statistically significant, 30 of these at better than the 1% level. Unfortunately the method of administration and scoring was slightly different in these two studies so that an intercomparison of groups was not feasible. As far as possible, under these limitations, the two normal groups were compared and no significant differences were found.

In addition to the need for a cross-validation of the original studies there remained the question as to whether or not this technique could differentiate between patients having brain damage and schizophrenics. It was also important to know whether neurotics using conversion or displacement mechanisms producing brain-damage-like symptoms could be differentiated from those having genuine psychological deficit as a result of intra-cranial lesions. A new group of 30 organics was tested by Walkup (13) and, at the same time, a new group of normals was tested by the author. With the continuous help of a psychiatrist and occasional assistance of another physician the control subjects were screened for brain pathology and psychosis but not for neurosis. This normal group was matched with Walkup's group in respect to age, I.Q., educational level, religion, national origin, sex, and race. The two groups differed somewhat in socio-economic level and marital status. All the scores of the new organic group fell within the range of scores previously established by the first organic group with the exception that one patient scored lower than any of the organics in the earlier testing. Likewise the new normal group fell within the frequency range of the first normal group except that one subject (whose age was over 75 years) fell somewhat outside of this range into the direction of the organic group. Cross validation was considered successful, after it was found that both of the organic groups differed from their respective control groups at better than the .001 level when the difference of the means of the individual total scores derived from a summation of sub-scores was compared by t-ratios, and their medians by chi squares (9). If we were to exclude three subjects over the age of 70 from the normal groups, a cut-off score of −54 would separate 92% of one group of organics and 100% of the other group from their respective normal controls. Even if we include these three low scoring normal subjects (each over the age of 70 years), a score of −138 separates 100% of all normals tested from 72% of the organics tested by the author, and 83% of those tested by Walkup.

Walkup's organic patients were matched with two new schizophrenic

groups by Szenas (11) and Esterly (2). Szenas' group consisted of 30 paranoid schizophrenics; Esterly's of 30 chronic, undifferentiated schizophrenics. Using chi-squares, these investigators found that both of their psychotic groups differed significantly from Walkup's organic group in 7 out of 18 variables (sub-scores) examined. The author tested 30 neurotics who were referred by psychiatrists because their symptoms interfered with their ability to carry out their occupational tasks. Ten of these had pseudo-organic symptoms such as amnesic and fugue episodes, reoccurrent headaches, blurred vision, tinnitus, dizzy spells, and pseudo-epileptic seizures. Each of these neurotics fell within the range of the non-brain-damage groups in the summation of their sub-scores. It is also believed that they can be subjectively differentiated from non-neurotics (i.e., normals and psychotics) by characteristic responses (5). These and a number of other studies (1, 7, 8, 10) left those interested in the object symbol arrangement technique hopeful that future investigations would reinforce favorable findings found to date.

From the beginning, however, the author has believed that symbol arrangement can make its greatest contribution by its potential in shedding some light on the psychodynamics of an individual, especially since it provides an internal reliability check so that the clinician may be alerted as to the possible fallacy of his assumptions. This paper, using an example from an individual protocol, will attempt to show how important elements of a patient's personality structure may be reflected by his performance on the symbol arrangement technique.

The stimulus materials of the test consist of 16 concrete and abstract culturally structured object symbols. They are three heart shapes differing in color, size, thickness, and translucency; three stars, two of which are identical; two butterfly shapes varying in outline, size, width, and color; a green amorphous sexual stimulus which also resembles a parrot in shape; a blue anchor; a transparent circle; an equilateral cross; and three dogs, often seen as a family by the subject. Two of these dogs are alike except in color, the third resembles one of the others in color but not in shape. If one wishes to combine the items for their cultural associations one must sacrifice logical color combinations. If a color choice is made, the objects cannot be combined according to size or thickness.

The administration of the test has been succinctly described by Shoben (11, p. 110) as follows:

> "It (the test) consists of 15 plastic objects which the subject is required to line up on a strip of felt marked off into 15 consecutively numbered segments of equal size. He is then asked to verbalize his arrangement. This is gone through twice. The next step involves having the subject interpret each of the objects symbolically in the sense that the American flag is symbolic of the United States as a nation. When this is done, he must recall the second of his arrangements. A final procedure has the subject line up the objects in order of his preference or liking for them."

Since this review was written, the administration has undergone a number of changes and additions. It is completely standardized in the revised edition of the manual (4). Dr. Shoben made certain justified criticisms of the research which had been completed up to the time his review was written. He concludes:

> "On the other hand, the KTSA (Kahn Test of Symbol Arrangement) is a simpler, more widely applicable situation than most instruments on hand for investigating developmental patterns and various attributes of psychopathological behavior. On a research basis, its use should be strongly encouraged. As a test, it is still essentially unproven." (11, p. 111)

In the evaluation of test performance on the symbol arrangement method of personality analysis, certain a priori assumptions are made. It is as-

sumed that the felt strip represents that part of the environment which is not subject to change by individual effort. The segments on the strip are numbered consecutively because time is consecutive. Today follows yesterday, and in our adjustment to life we cannot, operationally, transcend the boundaries or limitations of time. We may leave till tomorrow that which we do not wish to do today, but by virtue of this we are limiting what we shall be able to accomplish tomorrow. In the same manner, we are able to place one of the objects of the test in a certain area on the strip; but in so doing, we are excluding the possibility of placing another object in that same area. (Organic psychotics are not so limited. They have been observed to crowd several objects in a space reserved for one.)

The symbols differ from the strip in respect to maneuverability and flexibility. The patient may arrange them in any order using any reason that meets his need or expresses his personality. The two exceptions, of course, are the second line-up, which requires an arrangement similar to a previous one, and the fourth line-up in which the subject is asked to place the objects on the strip on the basis of their appeal and lack of appeal. For the fifth and final line-up the subject is given the same instructions as when the test was first presented to him. It is interesting to note the difference in a subject's performance between his last and his first arrangements. At first, the task was a new one; the symbols were unfamiliar; he had not touched them or seen them before. The last line-up is with now familiar objects. He has handled them, named them, described what they could represent or symbolize, and arranged them on an acceptance-rejection continuum. Finally, as the subject takes the objects off the strip he is asked to place them on the back of the individual record sheet, (11, p. 22), which has eight rectangular areas marked LOVE, HATE, BAD, GOOD, LIVING, DEAD, SMALL, LARGE. The placement of the object in these rectangles is compared with his previous verbal and manipulative performance on the test. A direct comparison of the subject's verbal statements and his manipulations is possible. Inconsistencies in this regard are often revealing of conflict, repression, and ambivalence in the specific area suggested by the particular symbol which was treated in a contradictory or inconsistent fashion. When such inconsistent handling is confined to one or two symbols, insights into psychodynamics are often strikingly clear.

When a subject is asked to tell the examiner what the test objects can stand for, represent, or symbolize, he may give a popular response roughly corresponding to the kind of popularity of certain Rorschach responses. As in the Rorschach, they are based on frequency of occurrence, and were selected after 1,000 tests had been administered to subjects who ranged in IQ from 80 to 150 and whose ages ranged from 18 years to 90.

The popular responses listed do not appear according to a ratio such as forty in one hundred cases. This section of the test has not been sufficiently standardized. The clinical psychologist can, however, obtain helpful guidance in his evaluation of the subject's responses if he carefully examines those which do not fall within the popular range and determines the nature of the cultural, emotional, or cognitive factors that may be responsible for these non-popular responses. Some of the objects have special significance for the subject, growing out of his dynamic needs. The analysis of the symbolization section of the test often yields valuable clues to the drives, needs, and fears of the subject.

Object	*Popular Responses*
Anchor:	Anything pertaining to sea, ships, boats, harbors or harbor cities, travel, adventure.
Butterfly:	Anything that flies or has

	wings, signifies freedom or escape or has phylogenic relationship.
Circle:	Anything pertaining to seeing, the heavenly bodies, earth.
Cross:	Anything pertaining to Christian religion, or other groups having the cross as a symbol. Also concepts based on the plus sign, or crossroads.
Dogs:	Any attribute commonly attributed to a dog, pet, home, family.
Hearts:	Anything pertaining to the tender emotions.
Parrot:	"I don't know what it is." Anything related to birds or animals.
Stars:	Anything relating to high achievement such as a star on stage or screen, anything related to heavenly bodies, or organizations which have stars as emblems, such as, "our country," material where stars appear—"our flag," also "good luck," astronomy, astrology and derivatives.

While it is true that the conscious or surface symbolizations are helpful in terms of personality diagnosis, the trained clinical psychologist can explore the unconscious symbolizations of which the subject may not be aware. These unconscious symbolizations differ with every person, so no rigid guide to their interpretation is possible. Only the clinician with skill and intuitive ability can properly identify the deeper meanings of the symbols. He does this by synthesizing the impressions he has gained from the subject's verbal and manipulative performance during the test. The unconscious symbolization differs with each subject according to his individual needs, culture and cognition. It has been found, however, that certain objects have clusters of unconscious symbolisms associated with their forms and colors in our culture. Some of these were shown to exist by the use of a number of techniques, including "testing the limits," clinical integration of case histories, other projective techniques, and free association with specific objects or groups of objects.

Some of these "popular" unconscious symbolisms follow. Again, it is pointed out that they are not intended to apply to all individuals; however, they do form a basis on which to work. If the clinician uses this list as one against which he checks his own conclusions, he may find it of value.

The level of symbolization and the emotional bias toward specific objects yield important clues in the clinical interpretation. Of particular interest is the ambivalence a subject feels as indicated by his contrasting of similar shaped objects. Case history studies of subjects who have taken the test show that the subject who calls the red heart "the good heart," or "real love"; the blue heart "sad love" or "unfaithful love"; and the transparent heart "thin or superficial love," indicates by these responses ambivalence in the area of the tender emotions, usually related to the maternal figure.

The lack of ability to see any of the tender emotions in any of the heart shapes indicates maternal rejection in childhood, or a traumatic wife-husband relationship. The clinical evidence suggests that a person who is not able to see love represented by any of the hearts is rigidly repressed in his interpersonal relationships. There is less rigidity but still repression if "Valentine's Day" or "Valentine cards" are represented by the heart shapes rather than a "love" response or such personalizations as "my wife," "my mother," "my husband."

Common Unconscious Symbolization of Objects

Objects	*Symbolization*
Anchor:	Escape or the opposite of escape—being anchored or tied down. It also represents that which weighs one down. It can symbolize adventure, running away, travel, escape, security, something to hold on to, faith.

Butterflies:	These objects usually have some unconscious significance, especially among neurotics. Often the manipulation rather than the verbalization offers the clue. They signify femininity, fragility, life, freedom from restraint, "flight from reality," insanity, homosexuality, and the Freudian symbolism of insects. To pilots they sometimes symbolize an aviation career.
Circle:	Desire for clarity, money and power, or maternal implications (Mother Earth), femaleness. As monocle-status.
Cross:	Authority symbol, father figure generalized. Related to the superego.
Large black dog:	Parental figure, mother figure, older sibling, father, husband.
Small black dog:	Sibling, husband, wife, companion.
Small white dog:	The subject himself, one aspect of self.
The two small dogs:	Ego and superego, siblings, man and wife, two aspects of self.
Red heart:	Tender emotions derived from maternal relationships and carrying over to heterosexual ideation. If color stimulus predominates, the tender emotions are inwardly directed toward self—consistent with emotional immaturity and sometimes narcissism. Most closely related to uninhibited expression of tender emotions.
Blue heart:	The contract of this object with the red heart suggests ambivalence in the area of the tender emotions. Sadness, depression, past emotional trauma.
Transparent heart:	Tender emotions on a superficial level. The subject preferring it to the other hearts (in Line-up IV) may indicate "large-heartedness" or generosity on a shallow or utilitarian level, interested in the impression rather than in intrinsic quality of the act.
Parrot:	Sexual significance, the phallus. The unknown, because of its relative shapelessness.
Stars:	Generally one's hopes and ambitions. Also goals which may be out of reach.
Transparent star:	Ambition, often on a superficial level. Sometimes represents those objectives which the subject desires for making an impression on others (in contrast to the red stars which may more often represent his own desires). Wishes which are culturally determined and lack emotional content. Also those ambitions in which the subject has been frustrated and has lost all hope of achievement.
Red stars:	These are the only two identical objects on the test. They often represent one's hopes, ambitions and strivings. When separated in Line-up IV, and provided there is no evidence of psychosis, the meaning is often that things, people, etc., that belong together have illogically been separated in life—common among those who have been divorced—if a basis of affection remains, and among "homesick" soldiers.

The dogs represent the direct approach to interpersonal relationships unencumbered by social or cultural obligations in contrast to the hearts (related to the superego) which represent the indirect approach to interpersonal relationships (particularly the tender emotions) "filtered" through the cultural matrix of our society. Hearts may be rejected by those who resent the cultural implications involved in emotional expression. The contrast of the relative acceptance of hearts versus dog objects is, therefore, significant as an index of the subject's acceptance of culture and its authoritative Gestalten in the expression of his affective drives.

It cannot be too strongly emphasized that the clinician must not arbitrarily assume that the patient he happens to be testing will make the same associations with the objects as any given normative group. Since the subject is asked to name the objects as well as to say what they represent or

stand for, the clinician will be given some good clues as to whether or not his subject is atypical. All tests are subject to "cook-book" interpretation and admittedly the symbol technique is vulnerable in this respect. However, it contains redeeming checks and balances which some other tests lack. The repetitive nature of the tasks is one of these checks. Also, the final action of the subject in sorting the objects on the back of the answer sheet gives confirmation or denial to ideas which the clinician may have evolved during the testing process.

Brodsly (1) in comparing two groups of children, one epileptic, the other normal, whose mean ages were 10 years, found that these children were able to make associations with the test that compared in many ways to the popular responses of adults. This was, perhaps, more important than his statistical findings, which were that only fifteen out of a total of 113 responses differentiated his two groups significantly, four at better than the 1 per cent level. The genetically early recognition of the symbols was again demonstrated when a group of children, aged 4 years, were able to name correctly a majority of the objects used in the test. Once the clinician has obtained some ideas as to how closely his subject makes the expected associations with the symbolic objects, he will be able to use advantageously the part of the performance where the subject is asked to place four of the objects, in turn, on top of any of the other objects remaining on the strip. The subject is thus required to make a manipulative association of symbol objects, encouraging him to "act out" certain of his non-verbalized drives. For example, a patient who had not emerged from the Oedipal stage placed the large transparent heart over the large dog. Previously he had said that the heart symbolized "one's heart's desire" and the large dog was represented as "the mother dog of a family." This patient had developed a reaction formation against his maternal dependency needs and emphatically denied that he had such needs. However, the psychiatric evaluation and other tests confirmed the presence of a disruptive and unresolved oedipal involvement.

Looking through some of his case histories, the author finds many examples of how the symbol technique may reveal with clarity the manner in which a subject characteristically acts out his psychodynamic drives. In the average case the administration of the test takes less than twenty minutes and a psychometrist familiar with the scoring directions in the manual (4, pp. 24-39) can score it in half of this time. It is believed that tests like the Rorschach and the TAT are more apt to reveal the nature and strength of given subject's dynamic drives, whereas the symbol arrangement test is uniquely suited to reveal how these drives are expressed in terms of overt actions. This, because the symbol test requires constant manipulation—acting out by the consecutive arrangements of the symbols on the strip—paralleling the verbal performance of the test throughout the administration from beginning to end. One example is given below to serve as an illustration:

A 24-year-old white male, native-born young man of a middle-class, mid-western family, complained of nervousness and tension which interfered with his ability to concentrate on his work. The patient was of average height and appearance, married two and one-half years and had an 18-month-old daughter. Apparently the wife was very easy-going and permitted the patient to have complete control of the finances, even though the latter was quite indiscrete in his use of money. The patient admitted having made some "foolish" purchases; among these was a new Lincoln car that required monthly installment payments of $140 for several years to come. Other purchases

revealed a curious need the patient seemed to have to buy the big, attention-attracting items beyond his means, of which the Lincoln was an example. He was now in serious financial difficulties and claimed that his "nervousness" was a direct result of this difficulty. In the summary of the report of the psychological examination he is described as: "tried hard to make a favorable impression . . . he is high-strung, ambitious, impulsive, and has a tendency to blame others for his shortcomings. Although no specific psychopathology was revealed, the test responses suggest that he failed to achieve an average level of emotional maturity."

The patient's Wechsler-Bellevue verbal score was 113; his performance score, 121; full score, 119. On the Draw-a-Person test he drew the male figure first. The drawing represented a sheriff; two pistols in holsters dangling from a belt, a sheriff's star on the chest, and a cowboy hat on a face that had remarkably close resemblance to that of the subject himself. The sheriff's arms were at his hips and the stance and total impression fitted into the patient's apparent need to say to the world "look at me – I am important – I am not to be trifled with."

On the Rorschach the patient gave only two Ws out of a total of 32 responses. Persons with high status drive would have been expected to have a larger W/M ratio. Nor did the protocol contain content such as "shields, coat-of-arms," etc., sometimes suggestive of ambition. Good form responses were in the majority. There were 3 FCs, 1 CF, and no C. This is certainly not suggestive of emotional lability. Identification with people, especially males, was judged to be quite poor in view of the patient's handling of the specific blot areas. Shading and three-dimensional responses were present in sufficient number to suggest "free-floating" anxiety. All in all, the Rorschach supported the Examiner's feeling that the patient was not necessarily an over-ambitious individual with poor emotional control, but instead one who suffered from a specific fear of being overlooked and not recognized.

When asked what was the most unpleasant thing he could visualize (Most-Unpleasant-Concept Test), he replied: "A very small child being in a position of physical danger when no one can help him." He illustrated this with a drawing of a crude house on fire, showing a small figure through an open window.

Returning to the case history, we find that the patient had an older, somewhat more successful brother, who was apparently preferred by the family and who had been much better able to make friends while they were children. The patient mentioned that as the younger one he was always regarded as the baby and was not permitted to share his brother's privileges.

After some probing he recalled that there had been a fire in their home when he was a child, and although there had been no real danger the patient's brother had told him that the family had planned to let him burn up with the house since he wasn't too important in the family. For years the patient had believed this to be true, although now he realizes that it was his brother's joke.

On the Symbol Arrangement Test the patient initially lined the objects on the strip in the following manner:

1. Large black dog
2. Small black dog
3. Small white dog
4. Round, transparent circle
5. Small transparent butterfly
6. Large transparent heart
7. Large transparent star
8. Small red star
9. Small red star
10. Small blue heart
11. Small red heart
12. Blue anchor
13. Black cross
14. Green parrot
15. Large brown butterfly

He carefully described the objects as either "large" or "small" and it was noted that in naming them he picked up and examined all of the larger objects (with the exception of the large dog), and touched none of the objects he described as small. When asked whether he had any particular reason for arranging the objects as he did, he replied, "I put the dogs first, and all the transparent materials together – I tried to make some kind of continuity –except for the last items which were a little odd–they had no continuity." The objects were placed on the strip from left to right, and the speed of the line-up was "fast."

In view of the case history one may speculate whether or not "a little odd" is a projected self-description, and it is interesting to note that the objects thus described were not considered as having "continuity." The orderly arrangement from left to right is consistent with ability to maintain intellectual control. The fast line-up suggests poor emotional control. Unusual speed in placing the objects is often due to psychic pressure expressed in heightened psychomotor activity. The emphasis on "bigger" and "smaller" in the naming of the objects indicates that the patient was unusually sensitive to matters relating to size.

On the second arrangement the patient lined up the objects almost exactly as he had them the first time. This lack of flexibility corresponds to some degree to the high F content on the patient's Rorschach. The patient revealed dependency needs by asking, "Does it matter if I line them up the same way I had them?" On the first line-up he had also asked, "Line them up any way?" He explained the reason for his arrangement by saying, "I lined them up the same way as before –except this time I put all the stars, including the large plastic star, next to the two smaller ones." The direction of the arrangement again proceeded from left to right and the speed was "fast."

The Examiner now said to the patient: "A flag can represent a country. A horseshoe can stand for good luck. A torch can symbolize knowledge or freedom. Tell me what each of these objects could stand for, represent, or symbolize. Go from one to fifteen."

The patient asked: "May I combine more than one of the objects into one concept?" His symbolizations were:

To the large, black dog–"A specific breed of dog, the terrior type"
To the black and the white dogs–"Black and White Scotch advertised in Esquire"
The transparent circle – "Aristocracy–monocle"
The small, transparent butterfly–"Something fragile, very light and thin"
The large, transparent heart–"A deck of playing cards"
The large, transparent star–"The North Star"
The two red stars–"I think of military rank, the insignia of a general"
The blue heart–"The campaign of the Heart Fund"
The red heart–"Valentine's Day"
The blue anchor–"The Navy"
The black cross–"If this weren't equal on all sides I'd say a crucifix. I'll have to say a plus sign, symbol of addition."
The green parrot–"A bird symbolic of Central America"
The brown butterfly–"Should I allow color to enter into these things, I'd say it was a dark, rare type of insect like the Morning Cloak butterfly."

The symbolizations gave indications of status awareness as is shown by such associations as "Esquire," "monocle," "aristocracy," "general's rank." This seemed to be somewhat contradictory to the Rorschach findings. It is noted that none of the hearts were seen as symbols of "love." The implication that there was something amiss in the subject's mother relationship is supported by the patient's poor responses in Card VII of the Rorschach which is often capable of revealing identification with the mother figure. The patient symbolized the Red Heart as "Valentine's Day." Of the groups tested so far, this type of association

occurs most frequently among psychopaths and represents a lip-service compromise acknowledging the tender emotions formalistically rather than with genuine affect. "Black and White Scotch" and "deck of playing cards" are also suggestive of psychopathy (10).

After the symbolization the subject was asked to place a semicircular transparent piece on any of the objects appearing on the strip. Often a patient will thus indicate which of the symbols has a special significance for him. In this case the subject placed the new object on the blue heart. This he had symbolized as "the campaign for the Heart Fund" and we wonder whether this symbol, so often related to past emotional trauma, is not in some way associated with his own "campaign" of which his reckless spending is one manifestation.

For the third line-up the Examiner asked the subject to arrange the objects in the same order as they were lined up the previous time. This request is made after the pieces have been taken from the strip and piled up on the table. Before he does this, however, he is asked to guess how many he thinks he would place correctly. The patient's estimate was 14. After the task was completed the subject was asked: "Now that you have lined them up, guess again how many you remembered to put in the right place." The patient's revised estimate was 15, or all of them. A comparison revealed that he had actually 13 right. In each case this patient over-estimated his ability, whereas the average subject under-estimates in his guess of how many he will be able to place in the same squares on the strip.

The four transparent objects were removed from the strip and the subject was asked to place each in turn over any of the objects remaining on the strip. The subject placed all of them on other objects with similar shapes, i.e., the heart on a heart, the butterfly on the other butterfly, and the star on one of the other stars. This is consistent with average or "normal" behavior. It corresponds to what on the Rorschach could be called "card-pull" and is contraindicative of psychosis or severe neurosis.

It was noted that in the third line-up the patient's speed of arrangement slowed down to "medium." This speed range is suggestive of good emotional control. The third line-up is a different type of stress situation from the others, since the subject is required to perform a task in which no choice is given. He must line the objects up exactly as he had them before. This does not require the subject to make any decision or do original thinking. Some subjects find this task more threatening, others less than when they are permitted complete freedom in the manner of arranging the objects.

For the fourth arrangement the Examiner said: "This time I want you to arrange the objects on the strip according to how each one appeals to you. Place the object you like most in the first square. Put the one you like next best in the second square. In the third square place the object you like third best. Continue in this manner along the strip, placing the objects you like least at the end" (4, p. 20).

The patient replied: "I see – just as I like the objects?" He picked up the blue heart, held it for a moment, and then put it back on the table. He then lined up the objects, arranging them from left to right at "medium" speed. He placed the large black dog on the first square, giving as his reason for preferring this object: "Hump –I think that it is the most realistic." The Examiner asked whether he could explain further. The patient then added: "Well, it is the most realistic as to the kind of dog it is – you can identify a breed from this silhouette." The Examiner was reminded of the new, large, shiny, expensive Lincoln for which the patient had mortgaged

himself up to the hilt. He well may have thought that one could identify "a breed," a superior breed to which he aspired by its "silhouette"—that is, outward appearance.

Among the objects the patient disliked was the green parrot. His reasons for disliking it were: "It is so unrealistic. I can't actually identify it. With some thought you can tell what it is. Actually, it's just a chunk of plastic." In the continuum of liked and disliked objects ranged on the strip, the small transparent butterfly was in last place. The patient gave this reason for liking it least: "No feeling—lifeless—no color." During the symbolization he had referred to this object as, "something fragile, light, thin." What is this "something fragile" which the patient is now repudiating? Could it be some aspect of his self-image? One is reminded of the child afraid of dying in the fire. A child is small, "fragile," and death is "no feeling," "lifeless," "no color."

The patient's fifth and last arrangement resembled his first in many ways, except that he now worked at medium speed—an improvement probably caused by the lessening of tensions due to the fact that the objects were now familiar and the task not a new one.

Such changes for the better are one of the indices of good prognosis to therapy which the test affords. However, there was no improvement in the rationalization for the manner of arranging the objects. The patient placed the stars on the strip with an impatient, throwing-down motion. Hostility and tensions first generalized are now shown to specific objects—to the stars which the patient had said represented "rank." (They may have been symbolic of the authority of the Examiner.) The reason the patient gave for his last line-up was: "Continuity up to 12." When asked to explain further, he said: "I mean putting similarly-shaped objects together as far as the 12th square but always the larger ones before the smaller ones."

The time had now come for the final task on the test. The patient was asked to place the objects on the rectangles which were on the back of the Answer Sheet. He picked up the three hearts first and placed them in the rectangle labelled: "LOVE." The three stars were picked up next and placed in the rectangle marked: "GOOD." The two small dogs were placed in the rectangle marked: "SMALL." The large dog placed in the one marked: "LARGE"; the small transparent butterfly in the one marked: "DEAD"; the large butterfly in the one marked: "LIVING"; the circle was placed in the rectangle marked: "BAD"; and then removed to the one marked: "LARGE." The Anchor and Parrot were also placed in this rectangle. The cross, the last object to be placed, was put in the rectangle marked: "DEAD."

Comparing the number of objects the patient placed in the two squares "SMALL" and "LARGE" gives us a ratio of 4/2 in favor of "LARGE." By chance alone we would expect this ratio to be 1.9/1.9. It seems that the emphasis on large is consistent throughout the test. The Stars which the patient has identified as authority symbols and which he threw down on the strip with apparent hostility were placed in the "GOOD" rectangle, indicating ambivalence to, and perhaps superficial conformity with those in authority. This was corroborated by the patient's case history. The two objects in the "DEAD" rectangle are suggestive of morbid ideation and correspond to similar content on the Rorschach. In noting the specific objects which were placed in this rectangle we obtain some reinforcement of our earlier tentative hypothesis that the patient associated the small butterfly with death. The "angel of death," too, is a winged creature, life is fleeting, wings belong to angels. Although the patient never mentioned "love" in any of his earlier associations with the

hearts, he placed all of the heart shapes in the rectangle marked: "LOVE." The implication is that he is again conforming, superficially, to the demands of culture. As his case history shows, he will conform when his hand is forced. He sold his Lincoln for a less expensive car when society brought pressure on him to live more closely within his means. It is interesting to note that the circle which the patient had called "monocle" and symbolized "aristocracy," was first placed in the rectangle marked: "BAD," and then moved to the one labelled, "LARGE." By this the patient may have revealed a corresponding shift occurring in his Weltanschauung. In childhood he could be an "aristocrat" (i.e., gain a sense of importance) by being bad, he admittedly was a "problem" boy. Now he substituted "bigness" for "badness" in his striving for superiority and recognition.

The cross object often represents a father or authority figure. In this way it is related to the figure on Card IV on the Rorschach, and like the blot on this card, the cross object is black and massive. The patient showed his ambivalence by not being able to decide whether to name this object "a cross" or a "plus sign." His gradual annihilation of that which this symbol represented for him starts with his calling it a plus sign thus depriving it of the grandeur which a religious association would have given it. Next, he placed it among the "least liked" objects and, finally, at the end of the test, he put it in the rectangle marked: "DEAD"... Placing objects into this rectangle often represents a death wish or a fear of death. When the self is implicated in the death wish the patient may place the large butterfly in this rectangle and this has been one of the differentiating features found between genuinely suicidal and pseudo-suicidal patients (8).

Examining the placement of each object and noting whether it moves up or down on the strip in the series of line-ups, comparing this with the kind and level of a subject's symbolizations, and finally the sorting of objects at the end, can lead the clinician to endless, but not necessarily fruitless, speculation. Freudians will take a view of the test performance consistent with their orientation. However, much material remains for the more precise evaluation of the experimental psychologist and the statistician, since most of the responses yield objective scoring criteria. All assumptions, guesses, hunches, that the test provides must be compared to similar and corroborating personality clues from other sources. Only when these clues fit each other like an interlocking picture puzzle may the clinician feel a measure of confidence in his interpretation of the so-called "psychological findings." If nothing more, it is believed that the symbol technique will serve as another link in the chain of psychological evidence which, when viewed organismically, will give the psychodiagnostician an understanding of his patient.

SUMMARY

This paper presents a technique of personality evaluation based on the subject's manipulation of fifteen objects with well-structured shapes. In the administration of the test the subject is required to arrange these objects on a felt strip on which 15 consecutively-numbered squares are marked off. This is accomplished five times under varying conditions. The final task requires the subject to sort the objects according to certain characteristics. This provides a check on previous performance. Common associations which subjects make with these objects are given, and some subconscious meanings the objects may have are presented. This is followed by an illustration of how the technique may be used to elicit the projection of dynamic drives. One case from the author's files serves as an ex-

ample of how clues to the interpretation of the personality may be obtained.

References

1. Brodsly, W. J. *Comparison of epileptic and non-epileptic children on a projective symbol arrangement test.* Master's Thesis, Univ. Southern California, 1952.

2. Esterly, G. R. *Comparative performance of chronic undifferentiated schizophrenics with brain damaged psychotics on the Kahn Test of Symbol Arrangement.* Master's Thesis Trinity Univ., 1954.

3. Fils, D. H. *Comparative performance of schizophrenics and normals on a projective object symbol arrangement test.* Ph.D. Thesis, Univ. Southern California, 1950.

4. Kahn, T. C. *Manual for the Kahn Test of Symbol Arrangement.* Beverly Hills: Western Psychological Service, 1949 (revised 1953)

5. Kahn, T. C. *Manual for the Kahn Test of Symbol Arrangement,* 1955 supplement. Beverly Hills: Western Psychological Service (in press).

6. Kahn, T. C. An original test of symbol arrangement validated on organic psychotics. *J. consult. Psychol.,* 1951, *15,* 5, 439-444.

7. Kahn, T. C. A comparison of psychotics with brain damage and non-psychotics on an original test of symbol arrangement. Paper read at the *thirty-first annual meeting of the Western Psychol. Assoc.,* San Jose, 1951.

8. Kahn, T. C. A comparison of the clinical data yielded by a test of symbol arrangement with other findings of suicidal patients. Paper read at the *thirty-second annual meeting of the Western Psychol. Assoc.,* Fresno, 1952.

9. Kahn, T. C. Cross validation of the Organic Brain Pathology Scale for a Test of Symbolic Arrangement. *J. consult. Psychol.,* 1955, *19,* 130.

10. Shafer, M. R. *Performance of sexual psychopaths on the Kahn Test of Symbol Arrangement.* Unpublished research, Medical Facility, California Department of Corrections, San Pedro, 1952.

11. Shoben, E. J. Review: Kahn Test of Symbol Arrangement, *Fourth Mental Measurement Yearbook.* Highland Park: Gryphon Press, 1953.

12. Szenas, J. J. *Comparative performance of paranoid schizophrenics and brain damage psychotics on a projective symbol arrangement test.* Master's Thesis, Trinity Univ., 1954.

13. Walkup, G. L. *Performance of thirty patients with organic cerebral pathology on the Kahn Test of Symbol Arrangement.* Unpublished research conducted at the San Antonio State Mental Hospital, Texas, 1954.

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The Rorschach "Z" Score

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This paper reviews the formulation and some empirically determined characteristics of the Rorschach Z score. The formulation of Z is one of Beck's contributions (4, p. 38), although he believes Rorschach was aware of the organization activity and described it rather pointedly (13).

Four distinct kinds of organization can be scored for all plates: wholes, combined adjacent details; combined distant details; and white spaces combined with filled in elements (4, p. 59). But they are not scored uniformly. Beck provides a table of Z weights (4, p. 212) that gives the value to be assigned to a particular kind of Z activity on a particular plate. Weights for similar activity differ from plate to plate. (In addition, special scoring directions are provided for plates II, III, VI, and VII.) The rationale for differential scoring is presented subsequently.

THE BASIS FOR Z WEIGHTING

In 1933, Beck published an account of his investigation that led to Z weighting (1). He noted that if W indicates intelligence, then there would be interpretative difficulties since the frequency of W differs from plate to plate. Part of W is "organizing energy" but it is present too when details are associated into larger meaningful combinations that are not necessarily W. So to obtain a better measure of "organizing energy," he designed a method that embraces all kinds of organizational activity.

To quote Beck with regard to the kinds of activity:

> These organized combinations fall into fairly clearcut groups. Thus the combination may consist of (a) adjacent details; (b) distant details separated either by white space or by solid portions; (c) white space combined with adjacent portions; (d) portions of the figure were broken up, and the elements so obtained recombined into meaningful percepts of analysis-synthesis process; (e) whole, W, responses; (f) elements of the figure were necessarily seen in meaningful relation to one another, until the entire figure was included in the response, but the reaction was at no time to the whole of the figure; (g) what may be described as a "striving towards a whole," without its being achieved, as when one S, reacting to the tenth figure, said: "The drawing doesn't seem to be held together; they [the details of it] are scattered; they give you a feeling of being thrown together more than put there" (1).

He then attempted to construct norms for these kinds of activity. The norm group consisted of 39 adults whom he described as "intellectually very superior." For each plate, the several kinds of organizational activity had some frequency; however, for all plates the frequencies for categories (f) and (g) above were so slight that they were discarded.

The following passage taken from Beck reveals the statistical treatment of responses for each plate (1):

> The same procedure was used for

As an example, the findings for the tenth of Rorschach's figures were as follows:

Whole (*W*) response	19
Combination of distant details	32
Combination of white and solid details	13
Combination of adjacent details	11
Analysis-synthesis process	3
Combinations into *W* without anyone being *W*	4
Total organizing acts	112

However, some of these combinations appeared in the same response, and it was found that there were 106 responses in which one or more associations were affected. There were a total of 331 responses to this figure. We add and subtract as follows:

Total responses	331
Responses in which combinations were found	106
Responses in which there were no combinations, *i.e.* only individual details were reacted to	225
Total organizing acts	112
Mental acts that come to expression	337

It is possible now to obtain a sigma value for each type of associational activity, using the method described by Garrett (7, pp. 101-104). Thus, in the case of the tenth figure we would get the following values.

	No.	%	Sigma Value	Sigma Distance from Zero Point
Zero point of Associational Activity	225	66.7	— .43	.....
Whole	19	5.6	1.58 — .43	2.01
Distant details	32	9.5	1.31 — .43	1.74
White with solid	13	3.8	1.77 — .43	2.20
Adjacent details	41	12.1	1.17 — .43	1.60
Analysis-synthesis	3	.09	2.36 — .43	2.79

all plates. A table showing the sigma values for each plate is presented later. However, he did not present the method by which the sigma values were transformed to the Z weights (4, p. 212).

Discussion of Z On Logical and Empirical Bases

Selection of Sample

The protocols of 39 very intellectually superior subjects were used in deriving Z weights. A superior population was selected to obtain norms for the general population to aim at. It is difficult to grasp the wisdom of such a premise. One might suppose that weights were confused with norms, believing, perhaps, that the performance of the superior group when transformed to weights would provide a pattern with which the client's pattern of Z occurrences might be evaluated.

Since the Z weights are based on a superior intellectual group, it would seem that the following assumptions are sufficient to show that the obtained weights are applicable to a general population: (i) That the kinds of Z activity he lists are exhaustive (i.e., no differences between groups are restricted to quantitative ones); and (ii) That any cell in the table of Z weights for the superior group multiplied by a certain determinable constant would give a product equal to the entry in the similar cell in a table of weights derived from a general population. Other assumptions would be necessary if qualitative differences exist between a superior and a general population. Evidence is presented later that shows that these two assumptions are satisfied.

Two Methodological Assumptions

That Infrequency Implies Difficulty:

Beck apparently assumes that the least frequent kind of Z activity for a particular plate indicates that it is more difficult than the other kinds of activity. (It is partially on this basis that he obtains sigma values.) That infrequency implies difficulty is a proposition that doesn't always hold in interpretation. Although the assumption is used in some relations, e.g., an original response is regarded as most difficult, etc.; it is discarded, e.g., when a response to Plate I is "a brown bearskin rug," or in the case of a confabulatory response. In the latter two cases, the infrequency of the response implies bizarreness. Empirical evidence is needed to demonstrate that the most infrequent kind of Z activity is the most difficult.

That Z activity is normally distributed in a general population: Since Beck obtains sigma values for the different kinds of activity he is forced to assume that Z activity is normally distributed in a general population. The sigma values were computed according to Garrett (7) who makes explicit that to determine the relative difficulty of items (here, proportions of Z activity), it is necessary to assume that the attribute being measured is normally distributed. Thus, the question is whether Z is normally distributed. Beck states: "The mean total Z credit in my control group was 31.10, the standard deviation being 26.44.[1] The range for the center of the population represented by this group would then be from 5.0 to 58.0 (5, p. 12)." Also, he reports in another publication that the median Z for his control group was 23.85 and Q was 12.74 (2, p. 32). It appears that the distribution is skewed and platykurtic; not normal. But it might be argued that the statistics characterize the weighted activity and not the actual Z activity. However, Wilson and Blake show that the relationship between total Z credit for a protocol and instances of Z is nearly perfect and positive (.98 to .99) for both normal and abnormal groups of each sex (18). Thus, the statistics might be inferred to be relevant to the instances of Z, and one is again led to infer that the distribution is not normal and consequently his computation of sigma values violates the assumption.

Other groups of Rorschach protocols manifest a similar deviation from normality.

1. The Spiegel group of 157 cases is often used as a norm group. The mean and standard deviation of Z for that group are 22.48 and 14.91 respectively (3).

2. An article by Jolles contains the Rorschach summaries of 65 feebleminded children (10). The mean and standard deviation for that group were computed by the writer to be 19.09 and 15.24, respectively. .

3. Wishner reports that for a group of 42, 25 males and 17 females, psychiatric out-patients (all neurotics: 13 anxiety neuroses, 3 character neuroses, 2 neurotic depressions, 6 neurotics with hysteria as the outstanding characteristic, 4 obsessive-compulsives, and 14 miscellaneous) the mean Z activity was 21.31, the standard deviation was 15.39, and the range was 2–52.5 (19, p. 269).

4. Beck reports that for 81 schizophrenic patients, 43 male and 38 female, the mean was 24.26, standard deviation 21.4, median 18.79 and Q 13.5. This group with regard to intelligence as categorized by Beck above consisted of 7 very superior, 16 superior, 26 high average, 22 average, and 10 low average (2).

5. Varvel reported the mean and median Z performance for five groups. The discrepancy between the mean and median for each group indicates a skewed distribution. The first three groups—a, b, and c—consist of 34 cases and were drawn largely from the upper socio-economic groups and comprise mostly professional people. All were depressed, but depression varied widely in degree.

a. Manic-depressive: N, 7; mean, 17; and median, 13.

[1] The control group consisted of 34 females and 30 males: 33 were normal, the remaining 31 had a history of psychiatric study—9 neurotic; 11 without psychosis, conduct disorder; 5 out-patient; and 6 were not classified according to kind of illness (2, p. 15). The intellectual constituency of this group of 64 was: 16 very superior (college graduates who were in professional occupations or people rated high in professions who were not college graduates); 21 superior (reached college, but had not graduated, were rated high in high school and in a vocation requiring technical work); 11 high average (had reached the upper high school grades); 10 average (graduated from common school, or reached first year of high school, or had an occupational history in a low bracket vocation); and 6 low average (had not completed all common school grades; or had a work history in lower vocational brackets) (2, p. 16).

TABLE I—Sigma Values for Every Test Figure for Every Type of Associative Organization [a]

W = whole response; A = combination of distant elements;
B = combination of white space with solid material;
C = combination of adjacent material.

Type of Organization	RORSCHACH TEST FIGURE I	II	III	IV	V	VI	VII	VIII	IX	X
W (1933)	.46	1.32	2.02	.70	.38	.90	.92	1.63	2.00	2.01
W (1954)	1.18	2.32	2.46	1.00	.37	1.93	1.95	2.35	2.48	2.45
A (1933)	2.21	2.09	1.44	1.35	1.96	2.34	1.15	1.15	1.78	1.74
A (1954)	2.63	2.80	1.58	2.53	3.52	4.10[b]	1.88	2.41	2.59	2.74
B (1933)	1.39	1.69	1.70	1.91	1.59	2.47	1.55	1.60	1.96	2.20
B (1954)	1.78	2.32	2.31	2.93	2.60	4.10[b]	2.23	2.19	2.73	2.96
C (1933)	1.60	1.16	1.28	1.57	1.06	1.21	.48	1.20	1.20	1.60
C (1954)	1.50	1.91	1.72	1.76	1.20	2.21	1.82	1.94	1.89	1.72

[a] This table is essentially the same as that which was published by Beck in 1933 except for: (a) all reference to the analysis-synthesis process is omitted for reasons already given; and (b) the new sigma calculations for each type of organization are alternated with Beck's rows of 1933 data. The new calculations are listed as 1954.

[b] For both "A" and "B" 1954, Plate VI, there was no frequency; thus the sigma value is indeterminate; however, the values entered correspond to that which would obtain for a proportion of .0005 and this gives some notion of how the two entries might be viewed.

b. Agitated-depressive schizoid: N, 14; mean, 15; and median, 8.5.
c. Neurotic depression and reactive depression: N, 13; mean, 44; and median, 26.

The above three groups and the two that follow are reported in a Bulletin of the Menninger clinic (17); however, fuller information on the following two groups can be found in an unpublished dissertation by Varvel (16).

d. Normal college students: N, 144; mean, 43.1; and median, 25.6.
e. This group consists of twenty students from "d" immediately above who were selected on the basis of a movement-color ratio (M: C) of 1 or lower to represent the "constricted" personality: N, 20; mean, 20.7; median, 10.26.

6. For the Rorschach summaries which are presented in Beck's Volumes II and III, the following statistics were computed: N, 53; mean, 35.04; and standard deviation, 29.32.

Without exception, the statistics which are available for the groups listed above indicate that Z is not distributed normally. However, no information is available that deals with Z parameters obtained from a general population (apparently those of the Spiegel group are the closest approximations). The available evidence does not support the assumption that Z is normally distributed.[2]

A Cross-Validation of Z Weights

In Table I, two sets of sigma values are presented for each kind of associative organization: one by Beck from which he derived his Z weights; and the other set by the writer on the basis of the 53 protocols presented in Beck's Volumes II and III. The following categories are omitted: the analysis-synthesis process which Beck discarded in 1933 on account of frequencies too low to permit statistical manipulation; and the special kinds of Z activity and their weightings for which no empirical validation is provided and to which the reader is directed from p. 212 of Volume I.

The correlation between pairs of entries in Table 1 is .849 which is

[2] Although this comment is based on a superficial observation of groups 1 through 6 above, the possibility of discriminating on the basis of Z among clinical groups appears to be remote. Valid individual classification on the basis of Z appears to be practically impossible.

significant beyond the .01 level of confidence. By inspecting the table, it can be seen that the discrepancy between pairs of entries is large. This, taken into consideration with the correlation, gives some support to the assumption that the difference between his superior group and a normal group is uniformly quantitative. However, it is not the writer's intention to imply that the protocols presented in Volumes II and III can be regarded as representative of a normal group. Although the precise method of transforming sigma values to Z weights was not presented, it is reasonable to believe that the sigma values obtained for the cross-validation sample can be converted into essentially the same Z weights Beck obtained from his superior group.

The Utility of Z for Prediction

The relationship between weighted Z and frequency of Z: Wilson and Blake published the most pointed study dealing with the goodness of Z scoring which shows that the weighted Z score for a protocol and the number of times which Z appears correlate almost perfectly (18). The correlations below between frequency of Z and weighted Z are taken from their article.

	N	R	S.E.	K
Male, normals	40	.988	.004	.154
Female, normals	20	.984	.007	.178
Beck, normals	21	.993	.003	.118
Beck, neurotics	15	.994	.003	.109
Beck, schizophrenics	8	.990	.007	.141
Total, all groups	104	.989	.002	.148

Had Beck simply counted occurrences of Z activity, the total would have had the same utility as the weighted Z score. The error of omission is that the correlation between the complex weights and the simplest weights (i.e., 1, 0) was not computed. Gulliksen, when discussing methods of weighting, remarks that to weight effectively one must know what is to be accomplished and whether or not a criterion is available (9). Beck apparently wanted to reward by weighting heavily the least frequent kinds of activity, but didn't succeed. Also, no criterion was used to determine if the Z weights he derived had a predictive power superior to any other set of weights for predicting that criterion.

TABLE II—Intercorrelations of Z, W, M, and R
N = 53

	Z	W	M
W	.843	.....	.....
M	.581	.222*	.....
R	.565	.287	.488

* This is the only correlation not significant at least at the .05 level of confidence.

The intercorrelations of Z, W, M, and R: Presented in Table II are the intercorrelations of Z, W, M, and R. These categories were selected simply on the basis of their apparent relationship with Z; no others were considered. The 53 protocols on which the correlations are based were taken from Beck's Volumes II and III.

Z is highly related to W and moderately to M and R. For this population, one could obtain a fairly good prediction of an individual's Z score from his W score. However, when M is added to the prediction equation for Z, the multiple correlation is .93 ($R_{Z.WM} = .93$); then when R is added, too the multiple correlation becomes .95 ($R_{Z.WMR} = .95$). Thus it seems that an individual's Z score might easily be estimated from his W and M scores instead of bothering with the cumbersome scoring of Z, providing the multiple correlation is substantiated by cross-validation.

Varvel also reports correlations between Z and other Rorschach variables (17):

> For the college group [the 144 cases mentioned earlier in the section dealing with the distribution of Z] the organization score was negatively related to F+% ($r = -.29 \pm .05$), negatively related to the average percentages of A, P, and F+ ($r = -.46 \pm .04$) and positively related to the sum of the movement and color responses ($r = +.79 \pm .02$).

Relationships between Z and global intelligence: Beck remarks that Z is

related to intelligence and measures a specific aspect of it called "organizing ability."

> . . . it [Z] is an index of the intellectual energy as such, irrespective of the *kind* of intelligence that S uses, something that does influence W . . . Thus, intellectual functioning per se (5, p. 12).
>
> These higher Z scores are always found in individuals whose work requires most difficult and complex intellectual effort. Its essence is the capacity to grasp relations not perceived by others (5, p. 12).

Evidence relevant to the proposition that Z is related to intelligence is available from an article by Jolles (10) and one by Wishner (19). Jolles presents the Rorschach summaries of 66 feebleminded individuals under eighteen years of age. An IQ was available for each case, but not everyone had been administered the same test. The following correlations were computed from the available data: Z and Binet IQ, = .08, N = 41; Z and Wechsler IQ = .15, N = 26; and Z and Arthur IQ = .10, N = 27.

None of the correlations is significant at the .05 level. For this group, the inference is that Z fails to relate to intelligence as defined operationally in terms of IQ by each of these tests. However, the relationship between mental age and Z is not known; possibly it is significant.

Wishner reports for a group of 42 neurotics,[3] previously described, the following correlations between Z and Wechsler-Bellevue combined scores: Z and full weighted scale, = .536; Z and verbal weighted scale, = .419; and Z and performance weighted scale, = .344. These correlations are significant at the .01 level except Performance Weighted Scale which is significant at the .05 level. The correlations seem to substantiate Beck's contention that Z assesses "intellectual energy" at least, for a neurotic group when the anchor for "intellectual energy" was the Wechsler scores.

One is led to suspect that the correlations for Jolles' data would have increased considerably if "raw scores" had been used rather than IQ's. When confronted with a similar situation, Ford remarks that for her data gathered from children the correlation between "organizational links" which somewhat resemble Z, and mental age was significantly greater than the correlation between "organizational links" and IQ (6, p. 76). The correlations she obtained were .684 and .223 respectively, and were based on 123 cases. She, in effect, holds CA constant and shows that for ascending groups according to IQ the mean scores for "organizational links" increase (6, p. 75).

Relationships between Z and special intellectual abilities: Goldfarb, in attempting to understand organizational activity, states:

> Apparently what Beck's Z score proposes to measure are the volitional and intellectual aspects of the abstract attitude. In other words, in the individual's productions one observes: (a) his ability to organize his experiences and to generalize from it, and (b) his will or drive to think along the lines of abstraction or generalization. In this respect, Beck's Z score may be said to be the equivalent of rating in other tests which directly attempt to assay the individual's level of concept formation or categorical behavior. Typical of such tests are the Block Design and the Similarities tests in the Wechsler-Bellevue Intelligence Scales, and even more pointedly, the Weigl Color-Form and Vigotsky tests of abstraction (8, p. 525).

In one sense, Goldfarb attempted to determine the congruent validity of Z by determining its relationship with measures that purport to assess the same intellectual function. His study was based on 30 normal adolescents (16 male and 14 female), who had a mean age of 12 years and 3 months. He obtained the following correlations, none of which is significant at the .05 level (Both the Weigl and Vigotsky were administered and scored

[3] He reports: "The age range was 16-42 computed to the nearest year; mean 24.90; standard deviation (S.D.) 7.17. The I.Q. range was 79-130, with a mean of 101.71, and S.D. of 14.88. (19, p. 267)."

according to Zubin-Thompson (20).): Z and Block Design, .25; Z and Similarities, .25; Z and Weigl, .23; and Z and Vigotsky, .08.

Wishner presents similar data which deal with the relationships between Z and special intellectual abilities as defined by the Wechsler-Bellevue subtests. Two tables adapted from Wishner are presented later (19, p. 271).

For the Wishner group of 42 cases which were previously described, the correlations significant at the .05 and .01 levels are .304 and .393, respectively. He obtained the following correlations between the Verbal subtest weighted scores and Z: information, .365; comprehension, .292; digit, .267; arithmetic, .296; similarities, .197; and vocabulary, .605. For the performance subtest weighted scores, he obtained the following correlations: picture assembly, .198; picture completion, .346; block design, .102; object assembly, .232; and digit span, .308.

The relationship of Z with academic achievement: McCandless carried out a study at the U. S. Maritime Academy to determine if Rorschach factors could be used to differentiate groups of men whose academic achievement differed (12). He matched thirteen pairs of cadets on: A.G.C.T., Mechanical Comprehension Test, arithmetic equated score, reading standard score, and education in years. He found that the mean Z score of the "High Grade" group was 43.3 and for the "Low Grade" group, 48.5. In this case, Z discriminated opposite to what was expected, although the difference is not significant at the .05 level of confidence.

VARIATIONS OF Z

Several investigators, who were not completely satisfied with Beck's method of Z scoring, attempted to alter it to provide a better theoretical measure of "organizing ability" or to predict some criterion.

Ford: Ford devised a scoring category called "organizational links" (The number of verbalized, logical connections within a response or within a record: hereafter referred to as "OL") which has some similarities to Beck's Z (6). She states:

> This (OL) represents the number of logical connections within a record. For example, the response "a man walking on a fence" would receive the score 2 OL (6, p. 28).

She found that OL increased for 123 nursery children between the years three through seven (the age-range which she studied), but increased most noticably at CA of 6 (6, p. 40); also, that OL increases with mental age and IQ (6, pp. 67, 75). She found, too, that OL correlated at .684 with MA and only .223 with IQ (6, p. 26).

Goldfarb: Goldfarb created and tested two variations of Z that remedied inadequacies he believed were inherent in Beck's original scoring and weighting scheme. He held that the traditional Z scoring was unsatisfactory because there was no scoring provision for organization activity that could be used to differentiate positive abstract, conceptual performance that revealed good engagement with reality from that kind of activity meriting Z credit that showed poor engagement with reality, intellectual passivity, etc. To sum up partially Goldfarb's point, much that is F− receives Z credit similar to F + responses. He devised two new methods of obtaining a Z score:

Organization Score 1. Scored according to Beck's directions.

Organization Score 2. Scored according to Beck's directions, except that only F+ responses were given credit.

Organization Score 3. Scored according to Klopfer and Davidson's form level rating (11). A description of the scoring method for this category is given below.

> Each response was scored in the following stages: (a) Basal form level was established. The basal scores ranged from −2 to +2. (A Minus score is similar to the F−

rating: a plus score is similar to the F+ rating: a zero score applied to noncommital form such as "clouds.") (b) Additional credit was given for each elaborated description of details of the thing perceived. A credit of .5 was given for each reference to a detail location rather than to each adjective to describe the detail. (c) Additional credit was given if organization activity was present. Each response received only one unweighted credit of .5. Maximum organization credit possible for each record was thus number of responses × .5. (d) Finally, since the Klopfer-Davidson scores ranged from −11 to +31, a value of +11 was algebraically added to each individual's Klopfer-Davidson rating. Total scores rather than mean scores were employed in this study (8, p. 527).

Thus, he showed that a new kind of organization score based on the Klopfer-Davidson form level rating manifests more significant relationships with measures believed to measure organizing or conceptualizing ability than does the traditional Z scored according to Beck.

Wishner: Wishner used three measures of conceptualizing ability in a research study designed to determine for neurotics, described previously, the relationships between purported Rorschach intellectual indicators and intellectual abilities. They were:

TABLE III—Correlations Between Organization Scores and Measures of Conceptualizing Ability [a]

N = 30

Tests	Block Design	Similarities	Weigl	Vigotsky
Organization Score 1	.25	.25	.23	.08
Organization Score 2	.35	.35	.35	.28
Organization Score 3	.62	.59	.58	.64

[a] The correlations do not differ from each other at the .01 level of confidence. To be significant at the .01 level of confidence a correlation must equal or exceed .463.

TABLE IV—Correlations of Rorschach Factors with Wechsler-Bellevue Verbal Subtests [a]

N = 42

	Info	Comp	Dig	Arith	Sim	Voc
Z	.365	.292	.267	.296	.197	.605
Z#	.200	.234	.320	.278	.306	.260
Z plus	.143	.075	.104	.113	.252	.247

[a] The necessary values of r for significance at the .05 and .01 levels of confidence are .304 and .393, respectively.

TABLE V—Correlations of Rorschach Factors with Wechsler-Bellevue Performance Subtests [a]

N = 42

	PA	PC	BD	OA	DS
Z	.198	.346	.102	.232	.308
Z#	.011	.129	.046	−.059	.192
Z plus	.027	.060	−.073	−.011	.125

[a] The necessary values of r for significance at the .05 and .01 levels of confidence are .304 and .393, respectively.

Z = Value of organizational responses scored according to Beck.
Z# = Total number of organizational responses, excluding unorganized wholes.
Z plus = Value of organization only in those responses in which F plus is primary.

Tables IV and V are adapted from the Wishner article (19).

Although much of the Wishner data that deals with the relationships between other Rorschach indicators and intelligence is omitted, it can be summarized as Z relates more consistently with intellectual factors as measured by the Wechsler than does any other Rorschach indicator. This summarizing statement is based on a study of a small neurotic group and the essential findings were not cross-validated.

The fact that the Wishner and Goldfarb studies were carried out on different kinds of groups makes comparisons extremely hazardous until the essential conclusions reached by the two investigators are cross-validated.

Z and academic achievement, Group Rorschach: Thompson (14) attempted to quantify Rorschach variables to determine if scales could be built to predict academic achievement, specifically those aspects that were non-intellectual in nature. As a criterion she used final grades of 128 students (81 male and 47 female) in a beginning psychology course. She investigated the following variations of Z.

a. Organization total for a whole series of cards (Z)
b. Average organization value per response (Ave Z)
c. Total organization on the achromatic cards (Ach Z)
d. Total organization on the chromatic cards (Ch Z)
e. Per cent of organization total on the achromatic cards (Ach Z%)

The following Rorschach items were associated with grades. Association is defined to be an absolute difference of more than four between the frequency of the upper and lower quarters according to grades (14, p. 402).

Grade Quarters		Rorschach Item
Q4	Q1	
30	25	Z more than 19
9	4	Ave Z two or more
7	12	Ave Z less than 1
29	20	Ach Z more than 9
20	8	Ach Z% more than 39%

Using the Altus *Measure of Verbal Aptitude* she found the following associated with aptitude (14, p. 405):

Aptitude Quarters		Rorschach Item
Q4	Q1	
32	24	Z more than 19
11	1	Ave Z more than 2
2	17	Ave Z less than 1
30	18	Ach Z more than 9
18	13	Ach Z% more than 39%

She then found Rorschach items that predicted the non-intellectual aspects of achievement. Only one "Z" met the demands. Ach Z% for the grade quarters was $Q_4 - 20$, $Q_1 - 8$; and for the aptitude quarters, $Q_4 - 18$, $Q_1 - 13$.

In a similar, subsequent study by Thompson (15), she found that "Z on plates IV and VI total Z," having a value of 15 per cent and up was the only category using Z that significantly related to non-intellectual factors in achievement.

SUMMARY

In this paper an attempt was made to present Beck's rationale for Z scoring. The rationale was criticized on several points, but a cross-validation of the Z weights showed that Beck's set and the new set similarly derived were highly related. However, Wilson and Blake demonstrated that Beck's complex weights are no better than the simplest possible set of weights.

Evidence was presented that showed: that Z is highly related to W, M, and R; that Z does not relate to intelligence (IQ) operationally defined by current individual tests, but does relate moderately to intelligence test "raw scores;" and that Z does not relate uniformly to academic success.

Variations of Z scoring were presented, along with some data that permitted an evaluation of them and the traditional Z in terms of their relationships with certain intellectual criteria.

References

1. Beck, S. J., Configurational tendencies in Rorschach responses. *Amer. J. Psychol.*, 1933, *45*, 433-443.
2. Beck, S. J., Personality structure in schizophrenia. *Nervous and Mental Disease Monograph*, 1938, *63*.
3. Beck, S. J., Rabin, A. I., Theisen, W. G., Molish, H., and Thetford, W. M., The normal personality as projected in the Rorschach Test. *J. Psych.*, 1950, *30*, 241-298.
4. Beck, S. J., *Rorschach's Test, I. basic processes*. New York: Grune and Stratton, 1950.
5. Beck, S. J., *Rorschach's Test, II. a variety of personality pictures*. New York: Grune and Stratton, 1949.
6. Ford, M., *The application of the Rorschach test to young children*. Univ. of Minn.: 1946. Instit. Child Welfare Monog., *23*.
7. Garrett, H. E., *Statistics in psychology and education*. New York: Longmans, Green and Co., 1926.
8. Goldfarb, W., Organizational activity in the Rorschach examination. *Am. J. Orthopsychiat.*, 1945, *15*, 525-528.
9. Gulliksen, H., *Theory of mental tests*. New York: John Wiley and Sons, Inc., 1950.
10. Jolles, I., The diagnostic implications of Rorschach's Test in case studies of mental defectives. *Gen. Psychol. Monog.*, 1947, *36*, 89-198.
11. Klopfer, B., and Davidson, H., Form level rating. *Rorsch. Res. Exch.*, 1944, *4*, 164.
12. McCandless, B. R., The Rorschach as a predictor of academic success. *J. appl. Psychol.*, 1949, *33*, 43-50.
13. Rorschach, H., *Psychodiagnostik*. Bern: Huber (2 ed.), 1932.
14. Thompson, G., College Grades and Group Rorschach. *J. appl. Psychol.*, 1948, *32*, 389-407.
15. Thompson, G., College Grades and Group Rorschach: a follow-up. *Pedagogical Seminary*, 1951, *78*, 39-46.
16. Varvel, W. A., *The Rorschach personality test in relation to perceptual closure*. Unpublished dissertation, U. of Ky., 1938.
17. Varvel, W. A., The Rorschach test in neurotic and psychotic depressions. *Bull. Menn. Clinic.*, 1941, *11*, 21-29.
18. Wilson, G. P., and Blake, R. R., A methodological problem in Beck's organizational concept. *J. consul. Psychol.*, 1950, *14*, 20-24.
19. Wishner, J. Rorschach intellectual indicators in neurotics. *Am. J. Orthopsychiat.*, 1948, *18*, 265-279.
20. Zubin, J., and Thompson, J., Sorting tests in relation to drug therapy in schizophrenia. *N. Y. State Psychiatric Instit. and Hosp.*, 1941.

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The Body Image in Art Communication

As Seen in William Steig's Drawings [1]

KAREN MACHOVER [2]

What constitutes the basis for communication between an artist and the viewer of his works has been a moot question. My experience in dealing with the drawings of William Steig, in connection with my course in interpretation of human figure drawings, has convinced me that a clinical orientation can contribute to this problem. Every now and then, an artist comes to prominence, whose work throws light upon some particular aspect of the process of art communication. Such an artist is William Steig.

I would like to examine with you the nature of Steig's appeal and consider the specific hypothesis derived, as a possibly important principle in art communication. The keen observation, biting satire, depth of conviction, and technical agility which Steig displays, though important, do not necessarily set him apart from other great artists. Ordinarily, such intellectual, analytical, introverted, and even esoteric drawings would produce morbid and cold reactions. On the contrary—Steig evokes a spontaneous, intimate, and warm response. Through the natural medium of the human body, he launches a direct, sensitive, and comprehensive attack upon human experience. He establishes a deep bond with his audience.

In unfolding the tragic nature of the society in which we are projected, Steig manipulates the human body to communicate a wide range of feelings, states of mind, and characterological defenses. Both his themes and methods are familiar to trained clinicians who have gathered their knowledge from quite different sources — from the study and application of technical tools of analysis and therapy. In his drawings, Mr. Steig is at once patient and analyst. He conveys levels, fusions, and contradictions of feeling and behavior which are not easily matched by the most searching novelist or psychologist. His own suffering and deep analysis of himself make it possible for him to expose to conscious view archaic, irrational, and regressive processes, usually submerged, avoided, or denied consciousness by most of us. Yet, when we look at his drawings, we have a vague sense that, although he is talking with *his* guts, he is really talking about ours as well. In other words, Steig articulates graphically many intimate body experiences which appear to us only in dream, toxic, or free associational states. Identification with the drawings, although at times uncomfortable, is spontaneous, although we do not fully know why. The fact remains that the detailed tracing of our common body experiences, consciously executed by Steig, strikes a chord of intimate familiarity.

Steig is neither literal nor abstract in his style, and yet he is both. When literal, we find his graphic statement far from simple. True enough, in this drawing (Fig. I),[3] he tells us that man is serene only when he has removed his hands and feet, and thus can go nowhere nor contact anything—when he is turned aside, and when he cuts off the social appurtenances that support him. For all of its literalness, much more is communicated in his

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[3] Illustrations reprinted by permission of the publishers, Duell, Sloane, and Pierce, Inc., from the Steig Album, Copyright 1939, 1942, 1944, 1945, 1947, 1950, and 1953 by William Steig.

FIGURE I

The proud one.
FIGURE II

FIGURE III

FIGURE IV

FIGURE V

FIGURE VI

FIGURE VII

FIGURE IX

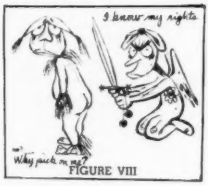
FIGURE VIII

FIGURE X

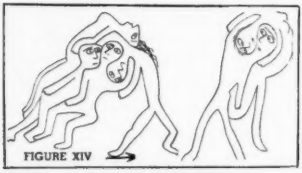
FIGURE XIV

FIGURE XI

FIGURE XII

FIGURE XIII

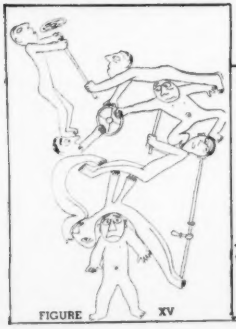
FIGURE XV

Gregarious Creatures
FIGURE XVI

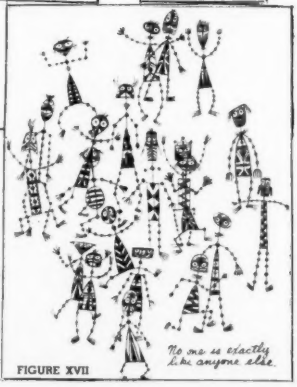
FIGURE XVII

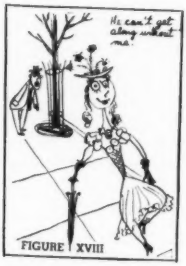

FIGURE XVIII

FIGURE XIX

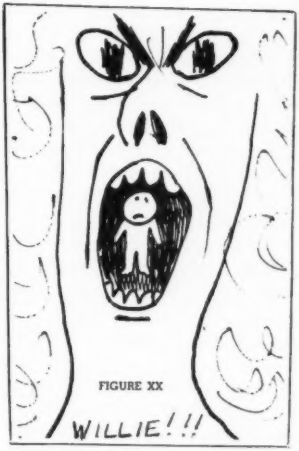

FIGURE XX

FIGURE XXI

FIGURE XXII

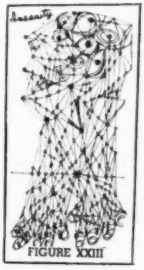
FIGURE XXIII

FIGURE XXIV

FIGURE XXV

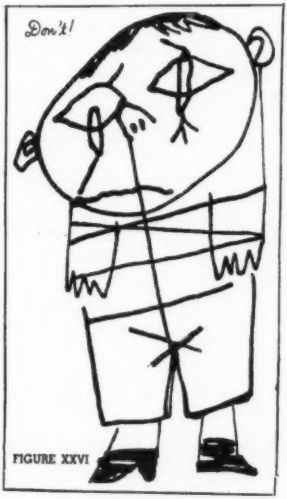

FIGURE XXVI

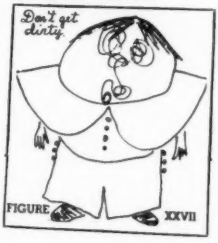

FIGURE XXVII

FIGURE XXVIII

FIGURE XXIXa

FIGURE XXIXb

FIGURE XXXa

FIGURE XXXb

special treatment of the body. He depicts a special kind of a man. Nor is Steig abstract in the manner of a self-conscious surrealist. Surely, he makes use of symbols and expressive forms (Fig. II), but these are fairly clear in their body-image equivalence and are thus readily communicable. Moreover, he selects the barren, isolated, and reserved spirit of pride as suitably projected by line symbols. Steig has been described as a comic artist. He makes one laugh (Fig. III), but he does not amuse. He conveys the tension that frequently underlies laughter. If you stay with his drawings, mirth soon blends into sadness, like this one. Steig is an extremely serious artist who talks with *his* body, about *our* bodies, often giving one a naked feeling—as if we have been Xrayed, like this drawing entitled "Weltschmerz" (Fig. IV). Is it this direct, intimate, unconscious body language that has made Steig a favorite of both the ordinary and the elite? If so, can other art works be examined in the light of the emotional impact of body language?

Steig is not a superficial commentator on human behavior or social mores. He digs deep for the causes, multiple manifestations, and the total complexity of body experience. Dealing with weak and imperfect man, who is constantly twisting and squirming to put up a solid front of adequacy and contentment, Steig draws appropriate mutilated body forms, like this one (Fig. V). His distortions are, however, not reckless or random. They show painstaking purpose and design. Here are a group of bigots (Fig. VI). He portrays them as animals, intellectually active but sterile people, socially active busybodies and as spuriously modest. What is remarkable, is that though Steig presumably is untutored in the clinically derived principles governing interpretation of the drawing of the human figure specifically, and in psychology of expressive movement in general, his drawings can almost serve as illustrations for clinical elucidation of a problem.

Thus, Steig conveys bigness, appropriate placement of the figure on a page (which is clinically interpreted as the environment), the pressured line of motor intensity, the more torturous and lighter line of the obsessive thinker, the concealment and facade values of clothing, and the universally experienced sexual symbols in ways not unsimilar to the projections of any individual who attempts to "draw a person." It is presumed that in all efforts to produce the graphic concept of a person, the pencil is guided by similar motivational sources, be it in the hands of artist or non-artist. We all share basic facts of identification. We all draw from the fact that first, we are human, then, we are of a specific sex, of a specific culture, have accumulated certain personal experiences, and we share in universal symbolisms.

The difference between Steig and the unskilled artist lies, perhaps, not only in the depth of his insight, but in the controlled presentation of his theme, which he offers as a deliberate message. Steig in his drawings is the analyst looking through the person, while this is not so with an individual who is asked to "draw a person." Thus, Steig can, with impunity, present types of distortions which render any person offering these in a clinical situation, suspect. If people appear as animals, as objects, or just as geometric or simple line forms, Steig does not hesitate to present them as such. In addition, he does not hesitate to distort and mutilate body forms, to offer animal and human combination, to present several levels and perspectives of a person at once, to present the unseen insides of a person, and to use symbols actively. Through the plastic manipulation of the human form at which Steig is an expert, he manages to depict graphically the most complicated factors in the anatomy of human emotions. He is sometimes difficult to decipher, particularly when he presents to our ra-

tional view drawings of the irrational aspects and motivational sources of our experience. His series on kinaesthesias reveals Steig's meticulous execution of minute body sensitivities (Fig. VII). He portrays graphically the body accompaniments of such common-place states of mind as feeling jittery, being furious, all strung together, or itching for contact.

Illustrative drawings are difficult to select. Steig is always eloquent in body language and expressive movement. Let us follow the basic message of Steig and give some examples of how he employs the body image to tell the story. In the *Lonely Ones,* Steig critically caricatures and distorts forms, burlesques, and emphasizes symbols, conveying the hostility and distance suggested by the title (Fig. VIII). In *About People,* he attempts, with greater compassion and realism, to present emotional states as well as caricature types. The body forms are three-dimensional, shaded, and more realistic clothing is used (Fig. IX). Many of these drawings are illustrative of analytic concepts, suggesting that Mr. Steig was perhaps in the depth of his own analysis at that time. It is interesting that Steig draws vertical ties on his men in these series whereas, in the marriage series, the ties, if present, are mostly bowties, to match the dissociated breast treatment of his hysterical females.

In all of Steig's drawings, man is depicted as basically castrated, confused, overwhelmed, and beset. He is always living on different planes, and is presenting shifting and contrary perspectives. His fate is a tragic one. Either he loses control (Fig. X), collapses into regressions, or, at best, attempts desperate and crude compensations (Fig. XI). Man cannot find himself. He has failed to establish firm identifications or encounter pleasant realities on which to build. Graphically, this unhappy male is presented with worry lines on his forehead, or weltschmerz grooving of his face. He is usually small, drifting in stance, and lacking firm legs to support him (Fig. XII). His head is most often bald. He not only lacks physical vitality, but is spiritually empty. The forehead, instead of being large enough to store ideas of personal destiny, is mostly short and receding, with a large eye put in place of "ideas," as if to suggest man's essentially passive, non-participating view of life. Often, a long, phallic-like compensatory nose, a common displacement of the sexually weak, is extended boldly into the environment, as if growing like Pinnochio's with every denial of his impulse (Fig. XIII). Arms are often thin, lacking in physical strength. They do not extend ambitiously. They are either short, are glued to the body, or point back to it. Legs taper, appear atrophied, or else the person is made to "sit out." Feet are usually tiny, or shod in pointy, effeminate shoes with heels. These weak figures are often clutching something for support. When outer clothing does appear, it fails to conceal the inner weakness of the live and growing parts of the body.

When this half-live, precariously poised, troubled, or rigidly defended man attempts social contact, Steig presents him as *All Embarrassed,* which is the title he assigns to the series in which he follows this desperate man in his search for some warmth, contact, or fulfillment. Rather than succeeding in his quest for human relationships, man is thrust into random, casual, and mechanical relations (Fig. XIV) on the basis of proximity, or the forging of one person out of the casual extensions of the other. Steig thus presents a deadly view of adaptation. In another drawing, this feeble man is desperately trying to climb to the top and get his hands on the steering wheel (Fig. XV). In his precarious perch, he steps over others, is hostile, unrelated, and makes frantic attempts to hold on, while others about him are already

falling off. In general, individuals support themselves by leaning on each other (Fig. XVI), while they all squeeze each other, and topple and sway. Man deludes himself that he is an individual. He clings to minor differences in size, shape and design as proof, that he *is* an individual, while he, with other primitives, flings out in uncivilized communality (Fig. XVII).

In examining marriage as a possible solution for this man, Steig, in the series entitled *Till Death Do Us Part,* has some harsh things to say. Women are usually larger than men. If pretty, the woman is wrapped up in her own narcissistic daydreams, making contact only to test her seductive powers. She is vain, often over-active, and turns away from man (Fig. XVIII). She may reduce him to insect-size or make him cringe with apologies for the sexual appetites which she, with pert breasts and swishing, transparent skirt, has aroused in him. If not pretty, the woman may express direct phallic envy and be oversensitive and socially difficult (Fig. XIX). To indicate the repression of the uncomely women, he gives them abundant, but tightly braided hair, and hats with flowers sprouting out of them suggesting displacement of their fertility. He uses, too, the inevitable necklace, another displacement of her "charms" to the control area of the neck. The maternal type is even worse. She will incorporate you (Fig. XX). She is most often large in size, austere, and angry. She does not have the curves or the impertinent breasts of the pretty women. In general, it appears that Steig's women offer more humiliation, than sanctuary, fulfillment, or support.

In his isolated men, we have seen stress on relatively larger heads than arms and legs. The latter may be finlike and the hands are often swollen with inhibited impulses. In the drawings in which men relate to each other, the head is often primitive, given minimal attention, while the arms and legs—organs of extension, activity, and contact—are emphasized (Fig. XXI). In these acting-out drawings, the hand is no longer oversized. Steig is quite aware of the problem of impulse-laden hands, and in one drawing titled "disease," a worried man is contemplating his swollen hand. In themes that concern random activity of dissociated limbs, lacking in body reference, Steig indicates joints (the nuts and bolts of the body) signifying feelings of body disorganization. Thus, as a social animal, man is overextended in relation to his essential ego resources. Limbs strike out in all directions aimlessly, without central, personal axis. In the pace of activity that constitutes social relatedness, man loses his personal identity. It is no wonder that Steig winds up this series with a man who has a huge head consisting of several levels asking himself *Who am I?* (Fig. XXII), and finally *Insanity,* a symbolic tangle of passive eyes with desperate phallic compensatory extensions (Fig. XXIII). The same theme is repeated in the form of a driven, tortured man-woman unit, whose body is coming apart and whose extremities are fanning in compulsive needs (Fig. XXIV).

Being torn, trapped, or in a web, are frequent Steig themes, most often executed literally. In his *Small Fry,* we see some respite, as Steig relives pleasant childhood memories with tender recall and humour. These drawings are full-bodied, situational, least distorted, and least anxiety-provoking (Fig. XXV). This mood was, however, shortlived. It was replaced by the more bitter and analytical drawings about childhood—less restful to contemplate. *Agony in the Kindergarten* tells in body language of the painful taming process of the maturing child by parents who have themselves suffered the consequences of premature restraint. The drawings are usually large, bold in line, and central in placement, and character-

ize accurately the behavior and the drawings of kindergarten children. All the sensory features are fused or connected to indicate the global nature of a child's sensory experiences. Eyes drip with curiosity, mouths d r o o l i n a n t i c i p a t i o n, and ears are large with apprehension. Over-stimulated by a busy and confusing world, the child is prevented from acting upon the stimulations by constant, echoing "don'ts" (Fig. XXVI). His potentially vital body is either bound in clothing, so that some one has to bend him if he is to move, or with actual ropes (Fig. XXVII). His arms are either omitted, cut short, built into the body, or glued tightly to it. Thus, the child is forbidden self-expression and the impulses are turned back to his body (Fig. XXVI). Should he attempt to gain some consolation in his own private way, he is met with even more emphatic "don'ts," since sex is heavily crossed out. Some of the children are still fighting their restraint, and others have already been crushed (Fig. XXVIII). Thus, Steig's agony in the kindergarten grows into neurosis in the college.

The sources and consequences of growth, or distortion, are best seen in Steig's own drawings (Fig. XXIXa). When young, the child is left, toppling, on a chair, closed up in a bundle of silence and ineffectiveness. He is given no legs to stand on, except those of the chair, no arms to extend with, no hands to grasp with, and no fingers with which to manipulate the world. The "below" is removed altogether. No hair grows, nor does he have the benefit of clothing display. Given no extension, or disturbing impulses with which to contend, he needs no neck with which to control or integrate his impulses with rational considerations. He nevertheless is seething with confusing sensory stimulations. Eyes and nose fuse in overlapping experiences, and the mouth droops almost like displaced and "discouraged" testicles. Active shading of the body, although controlled, bears further testimony of having body sensations, despite the castrated state.

The little human now develops into the "affable man" (Fig. XXIXb). He is still in his placental body form, with the offensive "bottom" cut off. He is designed for wary regard, for rigid defenses, and no activity except that suggested by an active, cruel, and rather querulous mouth. The motor system is rudimentary, and built in, while clothing surfaces are similarly of sheer token value. Arms are fairly firm and show open impulse flow in the connection with the body, and fingers too, convey the development of skills and efficiency, but the arms are cut off in ambition and built in so they can not extend. Buttons and midline, significant of dependence and body preoccupation, are appropriately indicated, in addition to the "black and white" shading which befit the tight collar of morality and control. The tie, symbolic of phallic display, is intense, but cut short like the arms. The same stiff tidying up is accorded the growing and sensually implicated hair.

Again, as with the kindergarten version, most of the body is head. This is partially turned aside in evasion, but must keep somewhat to the front to guard against danger. Since he is built-in and only a tenpin that can be knocked down, he must defend himself by wariness and tight constraint. The eyes are suspicious, nose is sharp, eyebrows critical, and mouth ready for sulk or attack. The ear, too, is overactive and conspicuous in defense against criticism or ridicule. In short, his defenses have made him an unsavory personality rather than the weak, silent, helpless bundle on the chair.

Briefly, and in conclusion, the following drawings may be presented to illustrate the gross, overall understanding of the body image that Steig

shows and his extremely clever manipulation of the body to convey his ideas. These are his classics (Fig. XXXa and XXXb). In the organic interpretation of ailments, Steig presents an infantile body, full of stomach concentration, and a radiating navel, which is still the central theme of the personality development. It was a mistake that the cord was cut. He needs no facial features, since his perceptions do not discriminate beyond his body needs. Flesh is abundant and powerfully charged with impulses, while the acting out of the power in the arms and swollen hands, is not possible. Arms are protectively glued to the side. Major body proportions are realistically infantile.

In the psychic interpretation of illness, we find just the opposite — an overmature, unfleshy figure, breaking apart, with a large head making wild attempts to manage unruly desires and impulses. The head is distorted and overactive with all sorts of piercing, sharp, some self-encircling, and some obsessive, crossed-out thoughts. It is the hair, or the sensual system, that produces this pain and disturbance. Body is barely held together, while the primitive features of sadistic orality (large mouth and teeth) and primitively aggressive fingers make their demands. He puts his hands up to keep them away from body contact. They are also up in horror and pain as if in a plea for help. The navel, midline, passive voyeurism, bespeak weakness that he attempts to negate by wide shoulders and a conspicuous Adams Apple.

In conclusion, the work of William Steig offers an eloquent example of communication between the artist and his public where the artist draws upon his inspired feeling for the language that the body speaks. The viewer of Mr. Steig's drawings experiences a "just right" feeling, although hardly understanding the nature of the intimacy. It is as if he, the viewer, would draw that way, if he felt the way that Steig's people are portrayed. Through the manipulation of the body image, Mr. Steig succeeds in communicating basic, direct, and perhaps partial or dim awareness of intimate and universal body experiences. Principles of projection derived from the clinical interpretations of drawings find "natural" and spontaneous expression in the drawings of William Steig. It may thus be that body language is an important element in the appeal exerted by all artistic productions depicting people.

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Effect of Personality on the Perception of a Motion Picture [1]

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Since the work of Bruner and Goodman (1), much literature has appeared in the field of "personality and perception." It was the intention of these first investigators to study perception in the "market place"—that is, the perception of everyday life. They objected to the work done previously, feeling that the laws of perception which were discovered were valid but were too limited, artificial and segmental. Bruner and Goodman, too, began by using a laboratory situation to study the effect of need on perception, but they hoped that broader aspects of personality and perception would eventually be studied. The research that followed, however, continued to be limited to narrow aspects of perception and personality. Stimuli such as tachistoscopic presentation of words has been standard and there has been little assessment of global characteristics of personality which influence perception.

The present study aims at broadening the investigation and, therefore, further carrying out the intentions of the first researchers. The stimulus used is a motion picture. A film involves human beings in action and, therefore, may be assumed to be more nearly like the perception of everyday life.

We also wish to assess the more global aspects of personality involved in the perception of a film. A device we may use to elicit such global personality aspects is the Rorschach. The Rorschach, to be sure, is itself a perceptual technique. But since the stimuli are extremely ambiguous, the projective factors are much more prominent than the perceptive factors and, therefore, the Rorschach tells us more about personality than perception. The stimulus provided by a motion picture of human beings in action, on the other hand, is highly structured and, though it certainly lends itself to projection, perceptual elements are more prominent. In the Rorschach, then, the outstanding factor is *projection* — or personality characteristics—and the outstanding factor in the observation of a motion picture is *selection* — or perceptual characteristics.

The hypothesis to be tested is: Individual differences in the perception of a motion picture are a function of global aspects of personality, as elicited by the Rorschach.

The method used to test this hypothesis was to show a film to a variety of subjects, present them with some open-ended questions about what they perceived, acquire Rorschachs on each subject, and then ask clinicians to match the perceptual protocols with the Rorschach protocols. If the clinicians could match them significantly better than chance, the hypothesis would receive confirmation.

In operational terms, the hypothesis was stated as follows: Clinical experts will be able to match the Rorschachs of subjects with what these subjects have written about their perception of a motion picture.

The film used in the present investigation was *Uirapuru*, an enactment by natives of the Amazon jungle of a story of a legendary bird of love.[3] The film has background music

[1] Part of a doctoral dissertation in personality and perception completed at UCLA in 1952. Thanks are extended to Professors Franklin Fearing, chairman, Bruno Klopfer, and Joseph Gengerelli for their particularly valuable assistance.

[2] Now at Fitzsimons Army Hospital, Denver, Colorado.

[3] Mr. Sam Zebba made this color motion picture in Brazil and generously allowed it to be used in the present investigation.

by Villa-Lobos and has won international prizes in Europe. This film is not, of course, typical of the everyday experience of perceivers in our culture, but it does involve human beings in action, with the resultant relationships, motivations, etc., that are the core of everyday life. The use of such a film also avoids the possible stereotypy which would emphasize the selective rather than the projective aspects of perception.

Twenty-four subjects, graduate students in anthropology, education and psychology, were shown the film and asked certain open-ended questions about their experience and perception of the film. These open-ended questions were as follows:

(1) How did you feel about the film? What did you particularly like or dislike about it?

(2) What do you think the person who made the film wished to express to the audience?

(3) Tell the story of the film as accurately as you can.

(4) What is the meaning of the legend? Give your own interpretation.

(5) Describe the appearance, character and motivation of the girl (heroine).

(6) Describe the appearance, character and motivation of the young man (hero).

(7) Describe the appearance, character and motivation of the old man.

(8) Describe the appearance, character and motivation of the people of the village.

The questions were so arranged that about a half page was allowed for each answer, but no limit was set. Answers ranged from four or five words per question to several hundred. The twenty-four Rorschachs were individually administered by several examiners and were scored by the investigator.

The twenty-four sets of protocols were divided into four groups of six each. The only selective factor in the classification was that of sex, so that there were two groups of six males each and two groups of six females.

The protocols were then submitted to four clinical psychologists, all experts in the Rorschach technique, for matching.[4] Each judge, then, was required to match six perceptual protocols with six Rorschach protocols. The instructions submitted to each judge specified that all subjects were clinically normal adult males (or females), and that the perceptual protocols were given in response to the film, *Uirapuru*. Three of the four judges had seen the film before. The protocols, of course, had no identifying data other than a letter or pseudonym randomly chosen. At the conclusion of the matching, each judge was asked how he went about the task.

TABLE I—Probability of m Correct Guesses in Calling a "Deck" of N Distinct "Cards" (excerpt from Feller (2)) (N equal 6)

M	$P_{(m)}$
0	0.368
1	0.367
2	0.187
3	0.056
4	0.021
5	.....
6	0.001

RESULTS

The appropriate statistic to assess probabilities in a matching experiment of this kind is given by Feller (2) [5]. An excerpt from his table is presented in Table I.

Of the four judges who did the matching, three achieved three cor-

[4] Thanks are extended to Dr. Bruno Klopfer of UCLA and Drs. Phillip Goodwin, Edwin Shneidman, and W. Marshall Wheeler of the Veterans Administration Neuropsychiatric Hospital, Los Angeles, who generously gave of their time for the matching.

[5] Feller shows that in a random matching of two similar "decks" of N distinct "cards" the probability of having exactly m matches is given by $Pm = \frac{1}{m!} e^{-1}$.

rect matchings out of six, and one judge matched all six correctly. As may be seen from Table I, the probability of achieving three correct matches out of six is .056, and the probability of correctly matching all six is .001. Although .056 does not quite reach the 5% level, the singular success of all four judges leads us to reject the null hypothesis and assume that the original hypothesis is validated.

Since the four judges had different sets of protocols, their resulting matches cannot be compared, but their independent methods of attacking the problem are of some interest.

Three of the four judges read the perceptual protocols first. They did this rapidly to get a "feel" for the subject and, rather strikingly, all four judges attended to what might be called "formal" characteristics, rather than symbolic content. One judge, for example, says, "I used such things as length, language, and feeling, instead of 'dynamics'." All judges used formal characteristics of both the perceptual and Rorschach protocols as a basic classifying point.

Another similarity among all the judges was the tendency to summarize their impression of either the perceptual or Rorschach protocol in terms of a single, sometimes colorful word. One judge labelled them as "the fancy one, the critical one, the negative one, the confused one." Another judge used labels like "the soft guy, the pseudo-emotional guy, the well-adjusted guy." In each case, the word merely stood for a number of impressions and served to keep the variations among protocols in mind.

Three of the judges used the psychogram as a gross differentiating criterion. One judge made direct predictions from the perceptual protocols to the psychogram characteristics and matched four out of six on that basis alone.

Three of the four judges accomplished the matching in less than one hour, while the fourth judge took about two hours. They all would match one or two very quickly, separate two or three which seemed similar to read more material, and usually had a difficult decision for the last two or three.

Success of matching was unrelated to length of protocol, occupational-education characteristics or sex of the subject.

The most striking aspect of the matching experiment was the similarity in approach of all four judges, although they worked independently. Since it was characteristic of all judges, we might label it the "clinical approach" and describe it as follows:

First the judge would read the first couple of pages of the perceptual protocol, quite rapidly, attending to "formal" qualities, language, style and idiosyncrasies. From this he would coin a colorful word to serve as key for the impressions. The judge would then read two or three more perceptual protocols rapidly and would then turn to the Rorschach, usually spreading out all the psychograms and matching one or two on the spot, without even reading the content of the Rorschach. He would then assemble two or three perceptual protocols and read them more carefully, noting the differences and looking for these in the Rorschach, but not attending to "dynamic" aspects. He would then make a judgment and then possibly a change, finally narrowing down to two or three sets which were very similar. After some weighing of the evidence, a choice was made, usually with great doubt as to the validity of the final choice.

Each judge could make comments about the "dynamics" of the subjects when pressed, but almost all insisted that this did not enter into their matching as such. All, of course, do use such extended dynamic interpretations in their clinical work, but felt that a matching experiment probably had more to do with the superficial aspects of the personality, or, at least

with relatively less subtle aspects as shown by response to a film.

Summary

The hypothesis tested was that individual differences in the perception of a motion picture are a function of global aspects of personality as elicited by the Rorschach.

Rorschachs were given to twenty-four subjects who had seen the technicolor film *Uirapuru,* and had answered open-ended questions about their perception of it. The Rorschachs and perceptual protocols were given to four clinical psychologists for matching. Three of the four judges matched three out of six correctly, P is .056, and one judge matched all six correctly, P is .001. The hypothesis was assumed to have received confirmation. Similarities in the independent approaches of the four judges were such as to discuss them as a "clinical method."

References

1. Bruner, J. and Goodman, C. Value and need as organizing factors in perception. *J. abn. and Soc. Psych.,* 1947, *32,* 33-44.

2. Feller, William. *Probability Theory and its Applications* (2 vols.), John Wiley, Inc.: New York, 1950.

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A Note on "A Comparative Analysis of Rorschach Forms with Altered Stimulus Characteristics" by E. E. Baughman

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An important and provocative contribution to our understanding of the Rorschach test was made by Baughman in his study employing parallel series of cards with altered stimulus characteristics (1). One observation, however, appears to be in error and requires further consideration. His results showed a significant variation in M% with the altered stimulus cards but none for FM%. Upon the basis of these findings he says:

> The fact that FM is independent of all the modifications made in the present study but M is definitely not independent of them suggests the lack of identity in the underlying processes.

This conclusion may not be inferred from these data. Logically two measures may be significantly related but only one of these two may vary significantly with a third set of conditions. It depends upon the degree of relationship between the two measures and the nature of the third set of conditions. Fortunately his results are presented in sufficient detail to permit proof of the theoretical objection.

If one transposes the data of raw scores (Table I) an almost perfect linear relationship between M to H+Hd and FM to A+Ad is disclosed.

TABLE I—Baughman's Results for Median Raw Scores

Series	M	H+Hd	FM	A+Ad
Chr.	1.1	2.5	3.8	11.0
Achr.	1.8	3.5	3.1	9.5
I-Form	2.8	5.0	2.9	8.0
Silh.	5.3	7.0	2.4	7.8
P-Form	0.8	1.5	2.0	5.2

These correlations follow from the definitions of M and FM. This was first demonstrated through a logical analysis of these determinants (as well as m) by Zubin (8). Statistical evidence of this phenomenon was presented by Stein (3). Returning to Baughman's data, if the stimulus characteristics of the cards are so altered that human forms are considerably more or less difficult to perceive but animal forms still stand out with relative stability, there will necessarily be significant variation in M but not in FM. Nonetheless, those individuals who respond with larger numbers of human movement may also give the greater number of animal movement responses. It therefore requires a different analysis of the data to draw any conclusion regarding common underlying processes for movement responses.

A simple method for determining the interrelationship between movement responses is to correlate the per cent of M, FM, and m for a large group of subjects. Sixty Rorschach records of three groups of school children of 8, 12, and 16 years were available to the author and were examined. Using the Klopfer method of scoring, converting raw scores into percentages, and making a median split for all 60 subjects, the following results were obtained (Table II).

The relationship between M and FM is significant and in the direction expected, but not the ones involving m. This may be due to the small sample and the relative infrequency of m in the older age groups. On the basis

TABLE II—Relationships Between M, FM, and m Per Cent for 60 Subjects*

M% to FM%	M% to m%	FM% to m%
$X^2 = 8.06$	$X^2 = .600$	$X^2 = .017$
$p < .01$	$p = .454$	$p = .81$

* Yates' correction for continuity was used.

of these findings, one would expect that the correlation between M% and FM% in Baughman's 5 series (100 subjects) should be positive and significant. The relationship of M and FM to m also may be significant and in the direction expected for this larger sample.

Whether there is a common underlying meaning for the movement responses which is independent of the meaning for color responses and other determinant groups is crucial to Rorschach theory and practice. Several factor analytic studies dealing with this problem have been done. Two by Wittenborn (6, 7) were essentially ambiguous but the latest by Williams and Lawrence (5) did report a factor including high loadings of M, FM, and m.

The Rorschach as presently administered and scored does not give us clearly independent factors related to specific determinant groups such as movement, color, etc. To achieve this requires further refinement and precision in scoring responses and, where necessary, some major changes. The relationship between M to H+Hd and FM to A+Ad needs to be eliminated by a method of scoring movement independent of content. A refinement of scoring also appears indicated by the observation of Werner (4), among others, that movement responses include activity, posture, and expression. This may be too inclusive a grouping and tend to obscure the common underlying process. Results by Singer and Spohn (2) indicate that the distinction between 'active' and 'static' movement responses is related to measurable behavior. Static responses such as "sitting" and "standing" and expressive responses like "angry" and "happy" might best be scored as 'alive form.' Whether this distinction facilitates a clearer emergence of the underlying meaning of movement responses would need to be tested.

References

1. Baughman, E. E. A comparative analysis of Rorschach forms with altered stimulus characteristics. *J. proj. Tech.*, 1954, *18*, 151-164.

2. Singer, J. L. and Spohn, H. E. Some behavioral correlates of Rorschach's experience type. *J. consult. Psychol.*, 1954, *18*, 1-9.

3. Stein, H. Scoring movement responses on the Rorschach. *J. proj. Tech.*, 1951, *15*, 526-533.

4. Werner, H. Perceptual behavior of brain-injured, mentally defective children. *Genet. Psychol. Monogr.*, 1954, *31*, 51-110.

5. Williams, H. L. and Lawrence, J. F. Further investigation of Rorschach determinants subjected to factor analysis. *J. consult. Psychol.*, 1953, *17*, 261-264.

6. Wittenborn, J. R. A factor analysis of discrete responses to the Rorschach ink blots. *J. consult. Psychol.*, 1949, *13*, 335-340.

7. ——— A factor analysis of Rorschach scoring categories. *J. consult. Psychol.*, 1950, *14*, 261-267.

8. Zubin, J. A psychometric approach to the evaluation of the Rorschach test. *Psychiat.*, 1941, *4*, 547-566.

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A Reply to Stein's "Note on a Comparative Analysis of Rorschach Forms with Altered Stimulus Characteristics"

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Stein is correct in stating that two measures may be significantly related and yet only one of these two measures may vary with variation in a third set of conditions. It is also true, however, that two measures may be significantly related without these measures representing completely identical processes; common variance does not preclude specific variance. The intent in the original article was to *suggest* a possibility, not to conclude that a differentiation between psychological processes represented by M and FM had been established as a result of experimental manipulation.

Working with correlations, however, is sometimes a tricky business and it may be that Stein has fallen unsuspectingly into another trap, as witness his interpretation of Table 1. One may alter stimulus characteristics and thus make human forms easier or more difficult to perceive, with correlated changes in M scores. The data, however, involve correlations in such an experiment and it may be that the stimulus alterations induce altered tendencies in Ss to experience kinaesthetic feelings which find expression in movement responses, hence they may seek out areas to interpret in this manner. Another way of expressing this is to say that the movement tendency may precede the content tendency, or vice versa; correlations do not permit decisions between such alternatives. The writer believes that Stein is correct in stating that stimulus alterations have given relatively greater perceptual prominence to human content areas than to animal content areas (especially on series S), but he has no proof for this *belief*, which must be differentiated from empirically established fact.

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BOOK REVIEWS

Delay, J., Pichot, P., Lemperiere, T., & Perse, J. *Le Test de Rorschach et la Personnalite Epileptique.* Paris: Presses Univ. de France, 1955, Pp. 218. $2.50.

This book on the Rorschach test and epileptic personality consists of three distinct parts. The first, and shortest one, summarizes the theories and descriptions of the epileptic personality based on clinical observations. Even in antiquity the most divergent opinions on the subject were voiced, attacked, and defended. The argument still remains unsettled. Purely psychological theories of epilepsy were first advanced in the XIXth century. The authors believe that with the Rorschach test it is possible to study the epileptic personality experimentally, to determine which psychological traits characterize the epileptics, and to establish whether the ascertainable traits occur in all epileptics or only in certain phases of etiological varieties of epilepsy. The second and longest part of the book gives a succinct but very informative critical survey of the Rorschach research with epileptics. The authors review 77 publications but doubt that they were successful in their aim to cover the entire world literature on Rorschach findings in epilepsy. A great part of the work on epilepsy was done in America. Forty-four of the articles appeared since 1945 inclusive. The contributions are evaluated not only in terms of their results but also by a number of methodological criteria. Among those criteria are presence or absence of a control group, type of controls; indication or lack of indication of the etiology of epilepsy, type of epilepsy; age; intellectual and educational levels; degree of handicap and severity of illness; and use of statistical measures of significance. The authors synthesize the numerous details and diverse findings in a number of brief and excellent chapters. Whenever possible, they reconcile incompatible results by weighing the scientific value of the respective contributions or by pointing out that the contradictions are illusory. They bring out that Rorschach records of epileptics can be divided into at least two distinct types, listing the components which make up each of the types. These Rorschach differences are closely correlated with the patients' different attitudes toward epilepsy and with the degree of deviation from normal behavior. This book contains the most nearly complete and critical survey of literature on the subject up to and including the year 1954.

The third part presents the authors' findings in 50 ambulatory epileptics. The diagnosis in each case was based on positive clinical and electroencephalographic examinations. The group is very well described, including intelligence in terms of two intelligence tests and etiology (traumatic, symptomatic, essential, and unknown). The personality difficulties of each patient were evaluated as severe, mild, or none, according to criteria defined and illustrated on numerous brief case excerpts. Classified as having severe personality disturbances were 12 patients, as having mild disturbances—17 patients, and as having no appreciable personality difficulties—21 patients. More than half of the patients were gainfully employed. There is no control group. However, the authors' purpose was to investigate the degree to which several Rorschach criteria could detect epilepsy in non-hospitalized cases of average general intelligence and a rather good work record, whose epilepsy had been confirmed by anamnesis and by repeated clinical and electroencephalographic studies. By comparison with epileptics hospitalized in public institutions, the authors' patients manifested, on the whole, mild losses in intelligence and in general life adaptation. The Rorschach records were analyzed to ascertain the ratio of human movement to color response. Only 8 percent of the patients produced more M than ΣC. There was a tetrachoric correlation of .77 between the total number of responses and the M:ΣC ratio, justifying the division of the cases into two rather distinct subgroups: a coarctated group with R below 15, and an extratensive group ($\Sigma C > M$ with ΣC at least 1.0) with R above 15. Frances Minkowska found that while schizophrenics tended to use verbs and adjectives implying separation, epileptics tended to use verbs and adjectives implying a connection, e.g., "attached," "supported," "attracted," "sitting," being between or on something, etc. One-third, exactly 17, of the patients produced this Minkowska sign.

The two other perceptanalytic criteria which the authors applied were the 1937 Piotrowski organic signs and the 1947 Pio-

trowski epileptic signs. A master table shows, for every one of the 50 epileptics, the presence or absence of every organic and epileptic sign; the total number of R, of M, of ΣC, of ΣC in plates II and III; the incidence of the Minkowska sign; the etiology of the patient's epilepsy; the cerebral localization of the focus of greatest dysfunction; and the incidence of perseveration evaluated in clinical terms. Sixty-eight per cent of the patients produced at least five (this being the critical value) of the organic signs. The number of patients detected by the epileptic signs depends on the critical value used. For the sake of caution, Piotrowski suggested that only records with at least seven signs be taken as indication of epilepsy. This stringent criterion was used by Delay and his co-workers. Forty-eight per cent of their patients produced at least seven signs. Consequently they concluded that the organic signs aided in the diagnosis of epilepsy more than did the epileptic signs. However, 80% of Delay's and his co-workers' patients produced at least five epileptic signs. The presence of at least 5 epileptic signs can be used as the Rorschach criterion of epilepsy because it is just as valid as the more stringent criterion of seven signs. In Piotrowski's original group either criterion differentiates equally well between the epileptic experimental group and the hysterical control group with epileptiform symptoms.

The authors computed many interesting quantitative associations (and measures of statistical significance). For example, the correlation between the Minkowska sign and ΣC in plates II and III was .83; between the Minkowska sign and ΣC in plates VIII-X the correlation was .62. The Minkowska sign was found in three fourths of the severely disturbed patients, an important result; it appeared in only one-fourth of the mildly disturbed patients. The r between the intellectual g factor and the number of organic signs was −.32, significant with $P = .05$. The following epileptic signs, M, Cn, Dscr, Com, IntRT, Host, appeared in the authors' group with a frequency not differing significantly from that in Piotrowski's epileptic group. On the other hand, signs Mtc, Sym, c'-shock, occurred among the Parisian epileptics significantly less frequently than among the New York epileptics. The book ends with two complete Rorschach records, scored and evaluated diagnostically. One is brief and coarctated, the other is long and extratensive.

The senior author, professor of neuropsychiatry at the University of Paris and director of the University Institute of Psychology, and the co-authors have other books, several of them on clinical psychology techniques, to their credit—in addition to this psychological monograph. This valuable monograph on epilepsy is concise, offers a great amount of information, and is by far the best publication on the Rorschach and its results in epilepsy. Both the methods and the manner of exposition are highly commendable.

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de Sousa, Cicero Christiano. *O Método de Rorschach.* Sao Paulo: Companhia Editora Nacional, 1953, Pp. 274.

The growing use of the Rorschach along with other projective methods of personality evaluation has been widespread. In South America an increasing abundance of research and clinical contributions continue to emerge largely in psychiatric journals published in the various countries. Occasional books find their way to the attention of North Americans such as de Sousa's and that of Endara,[1] also reviewed in this journal.

Dr. de Sousa has attempted to bring together some South American, North American, and European materials in the form of an elementary text on the Rorschach. While the Rorschach seems to have been introduced to Brazil in 1932, only within the last 10 years has it been possible to obtain organized instruction in Rorschach technique. More recently (1952) the Sociedade Rorschach de São Paulo was formed as the nucleus of a national organization.

The author's contribution in this setting is a significant one both historically and practically, despite the book's limitations. Borrowing primarily from Klopfer and Kelley, the latter of whom wrote the introduction to the book, but quoting from other specialists as well, he describes in fair detail the administration, scoring and interpretation of the Rorschach. There are several tables of popular responses and of D, sum-

[1] Endara, Julio. *Psicodiagnostico de Rorschach. Tecnica General. Aplicaciones Clinicas. Investigaciones de Clinica Psicologica.* Quito: Casa de la Cultura Ecuatoriana, 1951. (Reviewed by Spiegelman, Marvin, *Jour. project. Techn.*, 1955, *19*, 345-347.)

marizing the work of several authors. While some scoring samples are presented to exemplify the Klopfer scoring system, it seems doubtful to this reviewer that they are adequate for many of the judgments that will be necessary. On the whole, however, they provide a fair introduction for the beginner for whom this book was written.

It is in the area of interpretation that the book is weakest. The latest reference is dated 1949. The conventional interpretations of determinants and ratios are presented too briefly and with insufficient indication of the complexities involved in their contextual evaluation. The diagnostic section consists of a 13 page chapter on the normal adult, intellectual levels, childhood, adolescence, and cultural influences and an 11 page chapter on psychopathology with one-and-a-half pages devoted to schizophrenia, one-half to epilepsy, and one-and-a-half to psychoneuroses. Diagnostic material leans heavily on early references dealing with signs with minimal discussion of the psychodynamic meaning of the signs. There is no attempt to relate interpretation to a theory of personality. Ego functioning is not discussed. The approach is largely diagnostic-classificatory and rests upon a classical psychiatric approach, a fact lauded by Kelley in his introduction. This orientation is in marked contrast to Endara's book published a year later in Ecuador.

It might be said that this book parallels the early phases of Rorschach work in the United States and has as its major value the presentation of Rorschach technology in terms of the immediate needs of students. Recent publications in Brazilian psychological and psychiatric journals, however, indicate that there is a body of Brazilian clinicians who are far more advanced in their Rorschach training and in their utilization of dynamic personality theory. It can be expected that in the near future their level of development will be reflected in books directed at the mature clinician.

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Lossen, Heinz, Einführung in die diagnostische Psychologie; Möglichkeiten, Grenzen und Probleme der psychologischen Begutachtung und Beurteilung. (Introduction to diagnostic psychology: possibilities, limitations, and problems of psychological evaluation.) Stuttgart: Testverlag Siegfried Wolf, 1955, pp. 220, DM 18.

Lossen's brief survey of post war trends in "diagnostic psychology" is an unusually compact and informative little book. Its crisp style, terse summaries, and extensive references make for easy reading and stimulating browsing. Intended as neither handbook nor cookbook, it is more of a Baedeker to German language test developments in all areas of psychological diagnosis. The term "diagnostic psychology," introduced by Lossen's mentor, Professor Robert Heiss, emphasizes the central theme of the volume; that while theory should be oriented toward every day psychological practice, theoretical aspects of diagnostic procedures must continue to be emphasized, investigated and, when indicated, revised.

Most of the volume is devoted to succinct surveys of varied methods of personality evaluation, including 51 tests of intelligence, aptitude and achievement; characterological assessment; questionnaires and other means of social psychological research; and 28 projective techniques. Most of the descriptions consist of brief annotations and a few initial comments, referring the reader to the pertinent research literature. Considerably more space is devoted to the projective, or as Heiss suggests, "unfolding" techniques, particularly the Wartegg, Color Pyramid, and Rorschach tests. The term "unfolding" reiterates a comment often made in this country, that regardless of an individual's projection, the unfolding of the personality by the examiner is of primary importance in the interpretive process. Lossen classifies unfolding techniques into graphic-motor measures, perceptual - interpretive methods, and choice reactions, but readily concedes that any one may incorporate several qualities.

While German tests of intelligence, aptitude and achievement have, on the whole, not been as extensively validated as most measures developed in this country, the ingenuity of several seems sufficiently unique to warrant adaptation and further experimentation by others. Characterological methods, including expressive movements, handwriting, etc., serve primarily as means of observation, either in free or especially structured situations, similar to those used in large scale assessment programs. Direct questionnaires are rather unpopular in Germany and it would be interesting to speculate

about the reasons. Lossen reports that questions are resented as unwarranted inquiries into private affairs and that a Kinsey study would have been impossible. Conversely, indirect measures, such as sociometric techniques, have struck a ready response, and seem to be contributing a good deal to the post war efforts to investigate group behavior and social interaction.

Clinicians particularly interested in the Wartegg and Color Pyramid Tests, about which almost nothing has been published in English, will find Lossen's presentation an excellent primer. It is enhanced by three case studies complete with Rorschach protocols and other case material. Of course, the author cannot resist taking a potshot at the "mathematizing" of psychological diagnosis and "the statistical contributions of Anglo-Saxon psychologists." Readers of this Journal would surely endorse his warning that "no test can yield more than he who interprets it."

Another asset of Lossen's summary approach is his concise statement of theoretical trends. He traces the early beginnings of characterology, crystallizes the work of Klages, and describes the growing emphasis on more dynamic approaches. Thus, Thomae's concept of personality as a dynamic process attempts to integrate the theories of levels and structures proposed by Rothacker and Lersch with Heiss' views of personality processes.

In all, this is a stimulating survey of psychological methods, many of which are relatively little known in this country. It attests to the vigor of Europe's recovery and indicates once again that psychological ingenuity and sophistication are not exclusive to either side of the ocean. While not an extensive handbook, it does fulfill its avowed purpose of reporting current German language area trends in diagnostic psychology. As such, it is worthy of attention.

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Nuñez, Rafael, El Psicodiagnostico de Rorschah Aplicada a Niños. Bogota: Privately printed. Undated (1954). Pp. 100. (Address of author: Universidad Nacional de Colombia, Instituto de Psicologia, Bogotá, Ciudad Universitaria.)

In order to acquaint interested Journal readers with Dr. Nuñez' monograph as quickly as possible, this reviewer has gone ahead despite his ineptness with the Spanish language rather than seeking a more linguistically skilled reviewer.

Dr. Nuñez has produced a study of Rorschach data of Mexican children that is in many ways comparable to that of Ames[1] and her coworkers in this country. The author is familiar with related studies in several languages and refers liberally and appropriately to his bibliography of 56 references.

His research group consists of yearly samples of boys and girls from ages three through fourteen in contrast to Ames' range of two through ten. His samples are somewhat smaller with a mean of 25 at each age level. The children were from lower and upper middle class homes in Mexico City, of average to superior intelligence as estimated from Goodenough drawing scales and psychiatric interviews, and clinically normal. The author is aware of the sampling limitations and states that he is in the process of increasing the size of his samples and extending the cultural level and geographical representations.

In sections amounting to approximately 25 pages the author describes his samples, states his methodology, and summarizes the literature. He then subdivides his samples into three meaningful age groups: preschool (three to six), school age (seven to ten) and puberty (eleven to fourteen). Each year, however, receives a chapter organized much as those of Ames' age groups, albeit shorter. While statistical charts are few and rather poor in reproduction, the statistical data are presented partly in the running text and partly in the form of a representative psychogram for each age group.

Psychological descriptions at the various age levels are rather limited in scope, adhering rather closely to the conventional meaning of the Rorschach variables. The author is explicit in his recognition of the need for pattern evaluation rather than single variable analysis. As in the Ames study insufficient attention is given to intra-age variability and too much is made of the average profile. To this reviewer the dangers in such an approach outweigh the advantages, unless some indication of representativeness of the picture for the group is given.

An important consideration in the book's

[1] Ames, Louise B.; Learned, Janet; Metraux, Ruth W.; and Walker, Richard N. *Child Rorschach Responses.* New York: Hoeber, 1952. (Review: Troup, Evelyn, *J. project. Techn.*, 1953, *17*, 495-497.

utility for cross-cultural studies is the fact that the Klopfer scoring method has been used rather than the esoteric "Swiss" method adhered to by Ames. In this respect Nuñez' methodology is closer to the research milieu of this country and seems a more realistic contribution to clinical psychology here.

A few points of comparison with the Ames data may be of interest. Whether they are artifacts of the examining situation or a function of sampling or cultural differences cannot be judged with certainty. The Mexican group appear to be more productive of Rorschach responses at all age levels. F% remains fairly stable over the age range and is initially lower than among the New Haven children. C and CF emerge at earlier age levels and FC surpasses CF plus C earlier in development.

This book reflects the growing utilization of projective methods and modern clinical psychology in the Latin American countries. This reviewer feels that Dr. Nuñez has made a significant addition to cross-cultural data on personality development and on the Rorschach.

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GENERAL NEWSLETTER

Beizmann, C. Contribution à l'étude de la mentalité épileptique. *Bull. du Groupement Francais du Rorschach.* 1954, *6,* 1-2.

A brief summary of Rorschach findings with epileptics.

Chiari, Silvano. L'évolution et la signification des réponses kinesthésiques au Rorschach. *Bull. du Groupement Francais du Rorschach,* 1954, *6,* 41-43.

A summary of research with children and adults on the development and meaning of movement responses.

Orr-Schmolka, M. Le choc au vide. *Bull. du Groupement Francais de Rorschach,* 1954, *6,* 39-41.

Theoretical discussion of "blank shock" in response to Card VII which the author relates to attitudes toward life and death, security-insecurity, and protection-danger.

Pechoux, Raymond. Semeiologie des "chocs" dans le test de Rorschach. *Bull. du Groupement Francais du Rorschach,* 1954, *6,* 2-5.

The author describes several kinds of "shock" which may be stimulated by various aspects of the Rorschach blots.

Salomon, F. Diagnostics compares entre Rorschach et Behn-Rorschach. *Bull. du Groupement Francais du Rorschach,* 1954, *6,* 5-16.

Several differences in diagnostic potential between Rorschach and Behn-Rorschach blots are discussed.

Soboul, I. Interpretations du "clair-obscur" dans le test de Rorschach: leur signification d'après Binder. *Bull. du Groupement Francais de Rorschach,* 1954, *6,* 16-38.

Diagnostic implications of utilization of shading on the Rorschach.

Missaglia, Antonello. Osservazioni sulla XI tavola del T. A. T. *Annali di Neuropsichiatria e Psicoanalisi,* 1954, *1,* 539-545.

Excerpts from five cases are presented to demonstrate that T.A.T. card 11 is a stimulus for emotional-sexual shock. (Naples)

Carbonell de Grompone, Maria. El Psicodiagnôstico de Rorschach aplicado a los niños. *Archivos del Laboratorio de Psicopedagogia,* 1954, *6,* 5-17.

Data from Rorschach protocols of 112 normal and 50 problem children. (Montevideo)

Carbonell de Grampone, Maria. El Psicodiagnostico de Rorschach en sus relaciones con la percepcion infantil. *Archivos del Laboratorio de Psicopedagogia,* 1954, *6,* 18-40.

Presents distributions of location responses for each area of the blots from protocols of 113 children of ages nine through thirteen. (Montevideo)

de la Sovera, Maria and de Motta, Elena M. El Bender-Gestalt en ninos. *Archivos del Laboratorio de Psicopedagogia,* 1954, *6,* 156-167.

Description of performances on the Bender-Gestalt of normal and sub-normal children. (Montevideo)

de Lorenzo y Deal, Matilde G. Experiencia sobre el Test de Rotter y Rafferty. *Archivos del Laboratorio de Psicopedagogia,* 1954, *6,* 210-214.

Discussion of the Rotter Incomplete Sentences Blank. (Montevideo)

Anavitarte, Juan P. Un enfoque dinamico del Test de Rotter y Rafferty. *Archivos del Laboratorio de Psicopedagogia,* 1954, *6,* 215-220.

Discussion of the Rotter Incomplete Sentences Blank as a projective method. (Montevideo)

Shaltiel, Jehudith. Estudo psicologico de um caso de distrofia muscular progressiva. *Jornal Brasileiro de Psiquiatria,* 1955, *4,* 5-36.

Four brothers suffering from progressive muscular dystrophy were examined psychologically. Wechsler-Bellevue and Mira Myo-

kinetic findings are presented and discussed in detail.

Loosli-Usteri, Marguerite. Un cas d'oedème angio-névrotique guéri par la methode du jeu projectif: Edith. *A Criança Portuguesa,* 1954, *13,* 5-12.

A six-year-old girl suffering from angioneurotic edema was treated by means of Lowenfeld's "Little World" and puppet-show techniques.

Stern, E. Le monde de l'enfant, vu a travers le test de Murray. *A Criança Portuguesa,* 1954, *13,* 95-127.

A study of 20 normal children's perception of the world by means of T.A.T. content and language usage.

Fontes, Vitor and Pacheco, Olinda de A. Um caso de clínica psico-social. *A Criança Portuguesa,* 1954, *13,* 129-142.

A case history and study by means of the Rorschach, Pfister-Heiss Pyramid Test, and Koch Tree Test of a 11-year-old murderess.

Klijnhout, Adolf E. Neue Szondi-Aspekte - I. Szondi's "Triebpathologie." II. Untersuchungen in einer homogen Gruppe. III. Deutung. *A Criança Portuguesa,* 1954, *13,* 173-202.

A statistical and theoretical discussion of Szondi data on 1500 male adults with a discussion of new suggestions and reformulations in scoring and interpretation.

de Carvalho, Lopo. Alguns resultados da aplicaçâo do Teste do Mosaico de Lowenfeld. *A Criança Portuguesa,* 1954, *13,* 263-274.

Presentation of data obtained from 50 children between the ages of five and thirteen on the Mosaic Test. The role of I.Q. is discussed.

Ferreira, A. A. da C. Técnicas projectivas em psicoterapia infantil. *A Criança Portuguesa,* 1954, *13,* 285-312.

Varied case materials exemplifying the therapeutic use of projective methods in conjunction with group therapy are presented.

The following manuscripts have been accepted for publication as of October 31, 1955:

Byrd, Eugene	The clinical validity of the Bender Gestalt Test with children.
Carr, Arthur C.	The relation of certain Rorschach variables to expression of affect in the TAT and SCT.
Cox, Rachel D.	The normal personality: An analysis of Rorschach and Thematic Apperception Test responses of a group of college students.
Cramer, Fern J.	Personality changes and figure drawings: A case treated with ACTH.
Crumpton, Evelyn	The influence of color on the Rorschach test.
Dana, Richard H.	An application of objective TAT scoring.
Dörken, H., Jr.	The Mosaic Test: Second review.
Fiedler, Miriam F. and Stone, L. Joseph	Rorschachs of selected groups of children in comparison with published norms: I. The effect of mild hearing defects on Rorschach performance. II. The effect of socio-economic status on Rorschach performance.
Kagan, Jerome	Psychological study of a school phobia in one of a pair of identical twins.
Kaplan, Bert; Rickers-Ovsiankina, Maria; and Joseph, Alice F. D.	An attempt to sort Rorschach records from four cultures.
Kaplan, Bert	Increments and consistency of performance in four repeated Rorschach administrations.
Klopfer, Walter G.	The use of projective techniques in predicting performance in freshman psychiatry.
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